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▶ AUGUST 1986 VOL. 6 NO. 8

BRITAIN'S BIGGEST-SELLING HOME COMPUTER MAGAZINE

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SOFTWARE AT HOME FOR AMSTRAD, COMMODORE AND ATARI

BUYERS' GUIDE TO JOYSTICKS AND MICE

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EXCLUSIVE SPECTRE MODEM REVIEW

MIDSUMMER ARCADE MADNESS

CLUBS ★ ★ HINTS & TIPS ★ NEWS ★ SOFTWARE PREVIEWS

It does accounts, projections,

No wonder people are racing out to buy Amstrad's new CPC 6128 computer.

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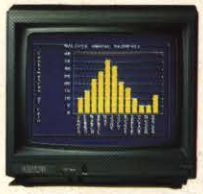
On the business side we start you off with a free disc which introduces you to the Amstrad CPC 6128's impressive range of capabilities, and the best ways to exploit them.

You'll discover how its massive 128k memory can open the door to over 8,000 CP/M* applications.

Programs like 'Wordprocessing' and 'Database' will file and index records, produce standard letters, mailing lists and even compile reports.



There's a series of business control programs which form a complete invoice, stock control and statement system.

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But even if you don't own a business there are plenty of good reasons for owning an Amstrad CPC 6128.

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However even software packages as comprehensive

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With Colour Monitor around	£399

YC/6128/6

Tell me more about the Amstrad CPC 6128

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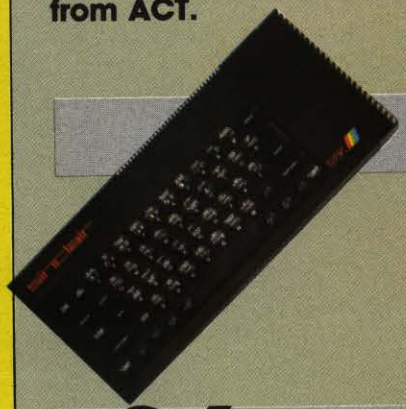

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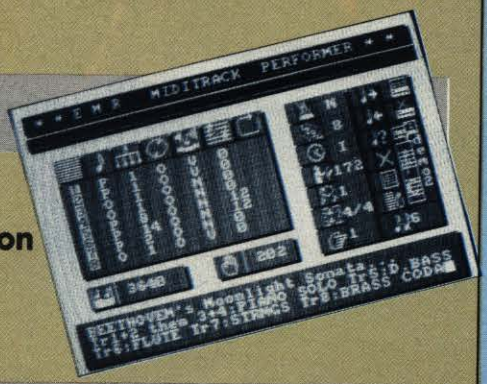

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"... incredibly easy to use. The end result is as good as anything I've heard this side of the Amiga."... POPULAR COMPUTING WEEKLY

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"Overall an excellent package.

Value for Money	5
Presentation	5
Use of Machine	5
Ease of Use	4
Facilities	5
Effectiveness	4

Total Score out of 30: 28"
MICRONET 800, December 1985

"Superior Software's SPEECH! is a quite remarkable piece of programming. ....The program takes up 7½ K of program space and is incredibly easy to use. It merely requires a new command word which is SAY preceded by a *. ...The end result is as good as anything I've heard this side of the Amiga and it'll make a stab at even the most ludicrous words constructed without vowels and at great length. ...It is possible to add words to the computer dictionary where they are not said exactly as they would be, using phoneme analysis and also to vary the pitch of the spoken voice. ...Why pay more?"
Popular Computing Weekly, 19-25 December 1985.

"The reproduction is suprisingly good and certainly on a par with some of the more expensive speech interfaces I have heard. All in all, an excellent low cost speech system that really is very good value for money."
Bruce Smith, Acorn User, February 1986.

"SPEECH! from Superior Software is a truly remarkable offering. A rare gem indeed among the morass of mediocre to competent efforts which dominate a reviewer's postbag. In my view SPEECH! is an absolute breakthrough for the BBC micro which deserves to sell by the thousand. ...Superior Software has produced a price breakthrough by achieving an apparent technical impossibility. David Hoskins, the programmer, has cleverly programmed the sound chip to do things which its designers never intended it to do. ...A most practical application example also provided is a spelling checker. This has always been a problem case for educational software — how to test spellings without printing the word and revealing all. ...This program is well designed and effective and users are encouraged to customise it with their own examples. In short, SPEECH! is a very clever and useful program being offered at a silly price. If you were planning to buy another arcade game, take my advice and spend the money on SPEECH! instead."
Jonathan Evans, A & B Computing, March 1986.

"SPEECH! is the most talked-about package ever created for the BBC Micro. For the first time it endows your micro with the power of speech for an incredibly low price."
Christopher Payne, The Micro User, April 1986.

"If I were a manufacturer of a speech synthesis product I would be greatly worried by the arrival of SPEECH! This is one utility that cannot be beaten on quality or price.

SOUND	9
GRAPHICS	n/a
EASE OF USE	9
VALUE FOR MONEY	9
OVERALL	9

James Riddell, The Micro User, June 1986"

COMPETITION COMPETITION COMPETITION COMPETITION

THE QUIZ

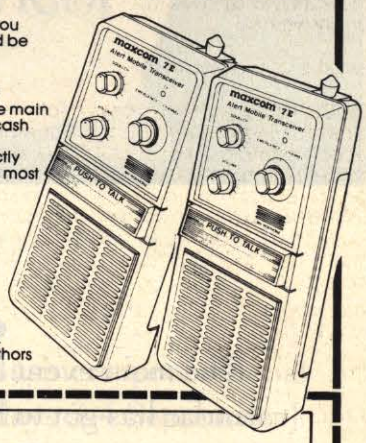
1. In which year did Superior Software release their first software cassette?
2. Can a computer be manufactured without using integrated circuits or transistors?
3. Which U.K. company manufactured the coin-operated arcade machine of the successful game Hunchback?
4. Name the author of Superior Software's SPEECH! program?
5. What was the name of the acclaimed home computer sold by Commodore before they produced the Commodore-64?
6. Which Superior Software game won the "Computer Gamer" Game of the Year Award for the Best BBC Game of 1985?
7. Name the Managing Director of Amstrad Consumer Electronics PLC?
8. Which of the following is not a valid phoneme representation as used in Superior Software's SPEECH!
EE UH C M NX ZH
9. What does the acronym ASCII stand for?
10. How do you spell the word "azure" phonetically in order to be pronounced correctly by the *SPEAK command of Superior Software's SPEECH! program?

Describe the most useful application of SPEECH! that you can envisage. (Please write your description on a separate sheet using more than 50 words, but not more than 200 words).

HOW TO ENTER
To enter, simply complete the 10-question quiz (on the left), and describe what you think is the most useful application for SPEECH! The completed entry form should be sent to Superior Software at the address given below.

THE PRIZES
Each entrant who answers the 10 question quiz correctly will receive a colourful SPEECH! badge (pictured left). All correct entrants will then be considered for the main prize of a pair of professional walkie-talkies (valued at **£200**), a trophy, and the cash prize of **£100**. The winner of this prize will be determined at the close of the competition on 31st January, 1987. The winner will be the person who has correctly completed the 10 question quiz and, in the opinion of the judges, describes the most useful application of Superior Software's SPEECH! program.

RULES
1. All entries must be accompanied by a completed entry form and a description (on a separate sheet) of what, in your opinion, is the most useful application of SPEECH!
2. All entries must clearly show the sender's name, address and age (if under 18), and should be addressed to: "SPEECH! Competition", Superior Software Ltd, Regent House, Skinner Lane, Leeds LS7 1AX.
3. The closing date for receiving entries to the competition is 31st January 1987.
4. The company's decision is final and no correspondence can be entered into.
5. The competition is not open to the employees of Superior Software Ltd, the authors of SPEECH! their agents or their families.



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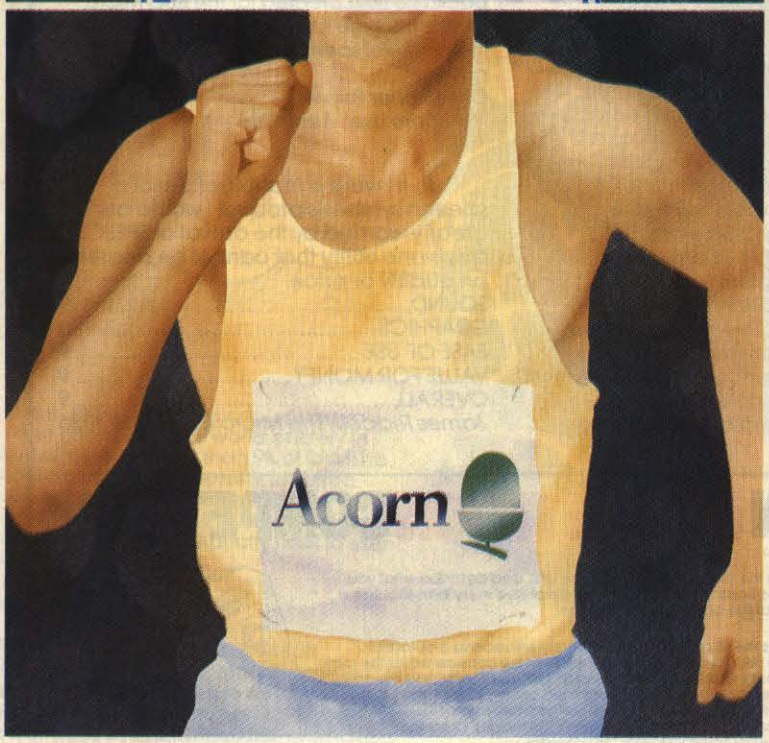

Join the front runners

The main event in the personal computing calendar has got to be the PCW Show at Olympia. It's the largest event of its kind held under one roof. And this September we're proud to be celebrating our 9th year.

Once again you've the golden opportunity to see all the famous names in the business battling for top positions alongside fresh, talented newcomers.

At your leisure you can pick and choose the ideas that will profit you best.

And with an extensive range of hardware, software and peripherals on show, you can be certain there's something of interest for everyone. Whether you're a seasoned professional, a teacher or an enthusiast.

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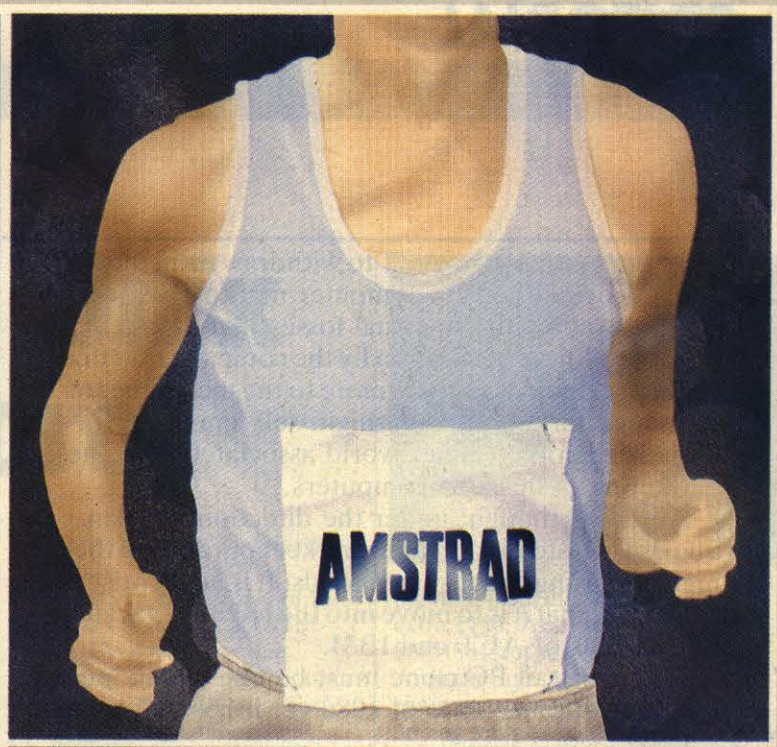

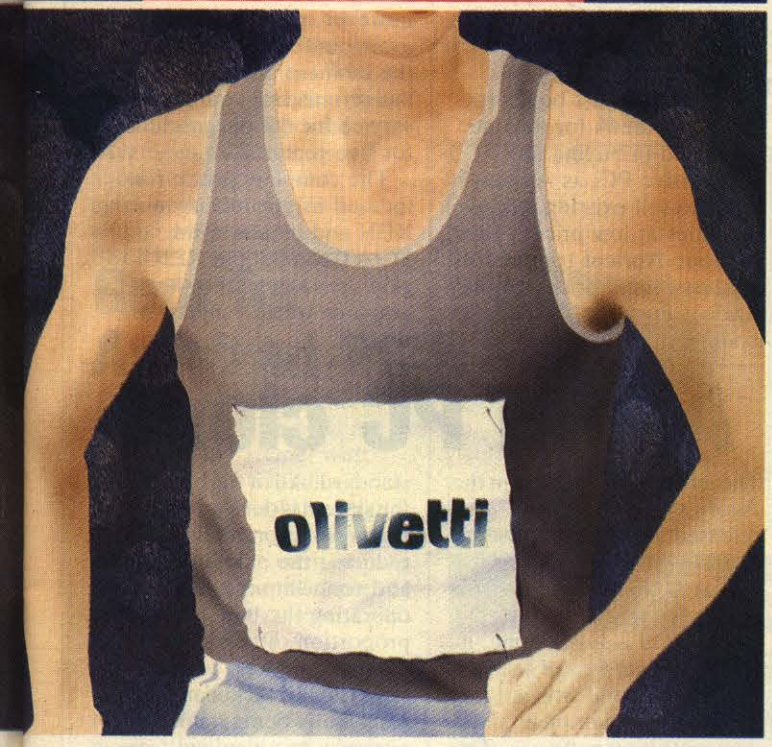

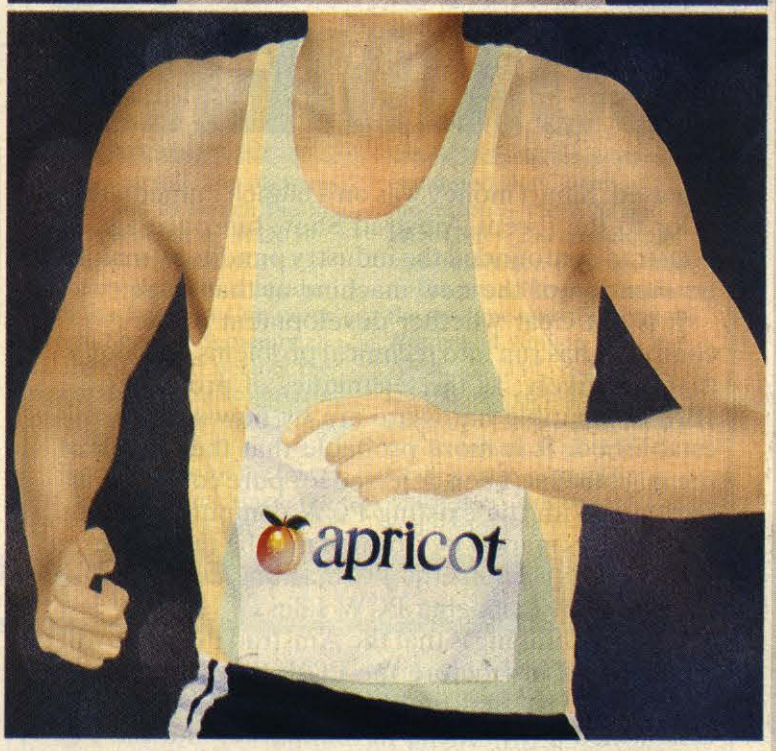

rs at the main event.

the new PCW Show Education Centre and the Association of Computer Clubs.

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COMMENT

The decision by ACT to withdraw from the low-cost end of the computer market and to swallow the financial losses that entails follows a realisation by the company that that segment now owes more to the techniques of the supermarket 'pile-'em-high, sell-'em-cheap' brigade than the calmer world associated with the marketing of business computers.

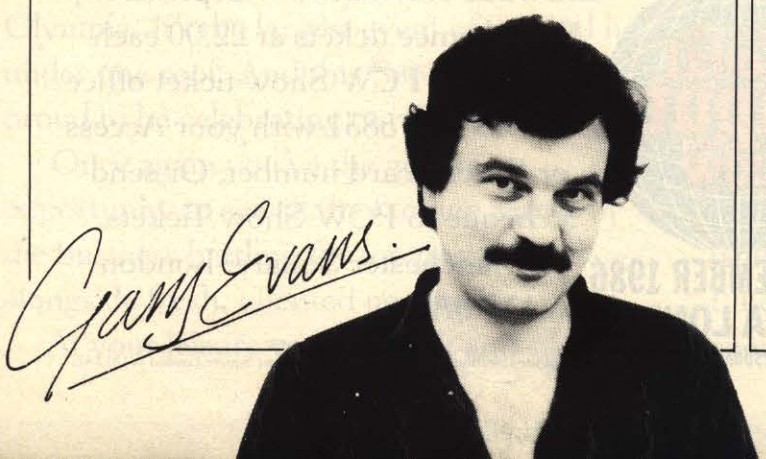
Amstrad, though, under the direction of Alan Sugar, is master of the supermarket approach to the merchandising of consumer goods. It is no surprise, therefore, that it is to move into the territory vacated by the likes of ACT and IBM.

The Amstrad PC clone must be one of the most talked about machines of 1986 yet it has still to be released. Smart money was on a launch immediately prior to the recent Amstrad Show but once again Amstrad confounded the industry pundits by making no mention of the new machine at that stage.

It is not clear whether development of the computer has run into technical problems, although that is unlikely, as the techniques of producing IBM-compatible hardware are by now well-established. It is more probable that the launch of the machine has been deferred for pure commercial reasons. With the existing PCW computers taking the business market by storm, it may be that Amstrad is reluctant to launch its PC machine and risk the possibility of damaging PCW sales.

Current thinking is that the Amstrad PC clone will be launched just before the PCW Show in early September. By that time the PCW will have established a firm niche in the market and the PC machine will consolidate the Amstrad position in the small business market.

All this, of course, is guesswork, as inevitably are any reports on the plans of Amstrad and it would be that Amstrad will have launched the machine by the time you read this.



PC dropped for XEN

There is good news and bad news for admirers of the 16-bit British-built Apricot PC. The company which produced the machines and their upmarket successors, the XEN range, has decided finally to abandon its original Apricot PC machine in favour of a fully-supported line of upmarket IBM PC-compatible XEN computers.

The move must be short-term good news for anyone interested in buying an inexpensive PC, as Apricot is likely to sell existing stocks of machines at low prices. The last time Apricot trimmed its product range, prices on the Apricot Portable, for example, plummeted from about £1,500 to £500.

The bad news is that it will probably mean increasingly little support for the older machines, including those F1 and portable models which many people bought the last time they were reduced to sub-£500 levels. There is, however, plenty of software available for the machines at the moment and the company has promised guaranteed service for the old machines for five years.

The company says it has focused its efforts now on the XEN and its new IBM PC/AT-compatible XEN-i to gain the large corporate accounts which it needs to survive.

Acorn PC clone

The latest computers from the Acorn workshops were released at the recent user show held and both are expected to do well in their respective markets. The Acorn M19 is a PC clone, a re-badged version of the Olivetti but sold with a generous amount of demonstration software. The machine is supplied with 256K of memory, upgradable to 640K, and has twin 360K 5.25in. floppy disc drives as standard. All of the power for the system is derived from the high-resolution monitor, reducing the number of plugs and connections needed when operating the unit. The major proportion of the sales of Acorn computers is to the educational market and the PC machine is being launched in response to a demand from that sector for such a product.

Ten demonstration discs are included in the package.

Take note

Adventure game addicts may be interested to know that long-time text adventure industry leader Infocom was recently acquired by the big Activision arcade game software company.

Activision, the purveyor of popular smash-hits like the 1984 *Ghostbusters*, is expected to continue the popular line of Infocom adventure games and use the company to broaden its arcade-tinted view of the world.

Infocom became one of the leaders in the adventure game business in 1981 when it released *Zork* for the Apple II. Zork soon became the *Zork Trilogy* and was followed quickly by other more off-beat adventures such as *Deadline*, a detective game, and *The Hitchhikers' Guide to the Galaxy*.

Atari plans Unix supermicro

Atari is rumoured to be planning a new 32-bit supermicro which will run the powerful Unix operating system and be available late this year or early next year.

The speculation is based on the fact that Atari has signed a licensing deal with AT&T in the United States – the company which owns the rights to Unix – and Atari boss Jack Tramiel is reported to have been making noises about wanting a 32-bit machine in the market by the end of the year.

The word is that existing ST owners will also be offered an upgrade to the new and more powerful system, although there are some doubts as to who in the enthusiast market which was so enamoured with the ST Mac-style icon environment would want to grapple with the complexities of Unix.

The ST, in the form of the bargain-basement 520STM with TV modulator, has recently been selling for as little as £699 with twin disc drives and a monochrome monitor – down from the previous price of £846. For an extra £150, Atari will add a SMM804 dot-matrix printer. At press time, however, the company stressed that the pricing was part of a June-July summer promotion.

Gem for Amstrad PC

The specification for the impending Amstrad PC is taking further shape, with rumours of an ST-killer implementation of the Digital Research GEM windows-icon-mouse operating environment featuring as a bundled part of the product, with at least 256K as standard RAM.

While the entry-level price of the machine is likely to be somewhere near the £500 mark, it will still cost about £800 by the time software and a printer have been added, thereby ensuring that the company does not undercut its own market for the PCW machines. That concern for the welfare of the existing PCW range is suggested to be the reason Amstrad postponed the launch of the Amstrad PC from June to September.

Most of the major software houses, including Bill Poel of New Star, have said they are working on 16-bit versions of existing PCW software for the machine. The New Star *New Word* word processor is already available for the IBM PC and Poel says it will run on the new PC.

New life for MSX

Remember MSX? JVC is hoping you will. The company is expected to launch the first of a new breed of MSX II machines in the U.K., probably timed to coincide with the Personal Computer World Show in September, taking particular note of the success of Amstrad by offering plenty of memory and a score of facilities.

Specifications for the first of the new MSX machines, the HC-95, include 3.5in. disc drives, detachable keyboard, expansion slots, twin processors – the Z-80 and the HD64180 – 256 colours and a high-resolution graphics mode.

The price, however, will aim the machine more firmly at the Ataris and Amigas than the Amstrads. JVC is expected to set the cost of the machine at close to £1,000 but promises not to release it until it has a healthy base of software from which users can choose applications.

Competition winners

Due to unforeseen difficulties we have been unable to announce the names of the winners of competitions in recent issues of *Your Computer*. We are now able to tell you the lucky ones.

Sky Fox

You did not find this competition easy. Leslie Battell, 6 Cotman Close, Abingdon, Oxon OX14 5NH was the winner. He will see the Farnborough '86 Show and Harrier Flight Simulator at first hand. The correct answer was 20 625 top of the screen.

Commodore 128D computer

There was a vast response to this competition. D. M. Jackson, 7 Sheridan Court, Monkbretton, Barnsley S71 2LT was the winner. The correct answer was 1. 7.0 2. 1571 3. 32 4. 1901 5. 40.

Who Dares Wins

There were many correct entries. Christopher Thompson, Arlan House, Broad Oak, Heathfield, E. Sussex TN21 8RV was the first correct entry drawn and wins the radio-controlled fast attack vehicle. Fifty runners-up win the computer game Who Dares Wins II. The correct answer was 1C 2B 3C 4A 5B.

Doomdark's Revenge

One hundred winners will soon be receiving story cassettes. Your entries were many and varied but *Montezuma's Revenge* and the *Hokey Cokey* featured high on the list of favourite subjects.

Weekend for two in Paris

Thank you all for your magnificent response to the survey. Many offered helpful and constructive suggestions for the future content of the magazine, which we hope will help us plan a better *Your Computer* in forthcoming issues. Now for the winner. K. L. Bonner, 59 Havant Road, Hayling Island, Hampshire PO11 0PY will soon be enjoying his weekend in Paris.

A list of the runners-up to the competitions is available for inspection in the editorial offices of the magazine.

Robtek Magic for Commodore disc drives

One of the most common problems to occur with Commodore disc drives is the misalignment of the head. On highly-protected software, the repeated reading of software errors tends to knock the head out of place. Eventually that will affect the way in which your disc drive operates and previously the only solution would have been to buy expensive re-alignment equipment or to make an expensive trip to your dealer.

At £19.95 the Robtek Magic Disc Kit will not only solve your alignment problems but will clean the reading heads, check the operating speed and change the device number. The kit is supplied in the form of two discs and a book of instructions. On running the program disc, you are provided with a menu of four possible options:

Device number: Choosing this option will allow you to change the device number of your disc drive. That may be useful if your drive cannot load the program.

Speed test: This program checks the rotational speed of the drive and then displays a chart showing the average speed throughout 10 consecutive tests. After the test, a message is displayed giving the result.

Alignment test: A chart is displayed showing the results of alignment tests at the inside, middle and outside tracks of the disc. The instruction gives an example chart from a perfectly-aligned disc and, by comparing that to your own results, it is possible to tell whether your drive is in need of attention.

Should your drive fail either the speed or the alignment test, the booklet contains step-by-step instruction on how to correct the fault. In both cases, it involves running the program with the cover of the drive removed and adjusting the stepper motor or speed adjust screw until the results are positive.

Head cleaner: The fourth and final option involves placing an abrasive white disc into the drive, which then cleans the read/write heads. Robtek recommends using the disc once a week but after 15 operations, a new cleaning disc, costing £1.95, needs to be bought.

If the heads in your drive are badly misplaced, with professional repair shops charging around £30 a time, this is obviously a cheaper and equally effective way of ensuring that your disc drive is at its best.

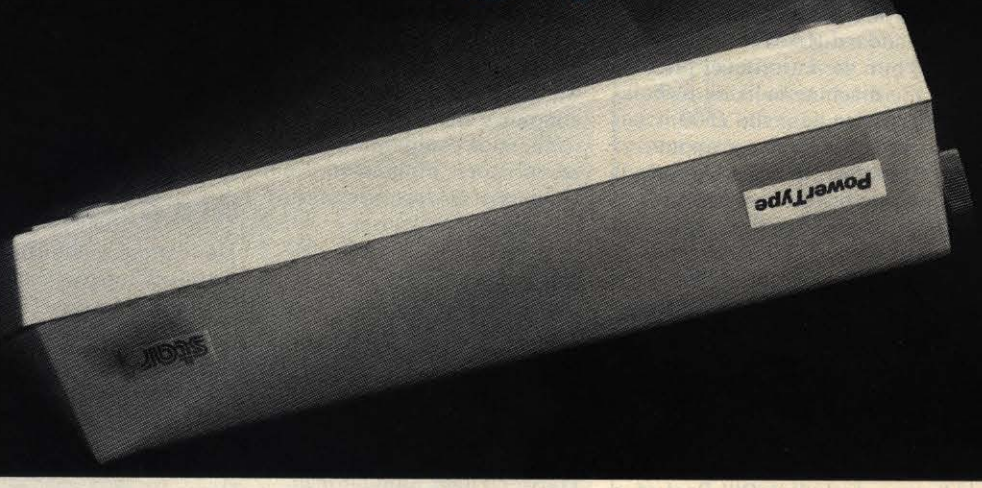
Organiser II sales increase

Sales of the Psion Organiser II have exceeded all the manufacturer's expectations. The huge sales can be attributed to the many powerful features, including multiple alarm and calendars, address and telephone files, an advanced calculator, a perpetual diary and the ability to store vast amounts of business and personal information, all of which can be cross-referenced.

A 32K ROM chip carries the structured programming language, OPL, which also permits users to write programs to suit their needs.

"We have had to telescope our original phased production schedule to cope with the demand," says Dr David Potter, chairman of Psion.

We're standing printer p



PowerType DAISYWHEEL PRINTER £229

With over 100 type fonts on widely available daisywheels and using standard ribbon cassettes, PowerType is remarkably cost efficient. A wide carriage giving up to 165 columns of beautiful print in the typeface of your choice, even a graphics capability, the flexibility of reverse paper feed and 18 characters per second means swift, classic correspondence. PowerType comes with Parallel and Serial interfaces as standard.

A&B Computing said in July that Powertype was a quality printer with a host of standard features, excellent value at £400 – How would they rate it now?!

STX-80 THERMAL PRINTER £79

This quiet and efficient machine prints at 60 characters per second and the compact thermal printhead, designed for dependable performance, will give you a lifetime service of 20 million characters.

Star Micronics U.K. Ltd. Craven House, 40 Uxbridge Road, Ealing, London W5 2BS. Telephone: 01-840 1800. A division of Star Micronics Co., Ltd., Japan.

"Initial capacity will have to be doubled to 5,000 per month in the next few months and we have also revised upwards our original sales forecast of 40,000 units in the first 12 months."

Blank disc bonanza

Compumart, the Loughborough-based blank disc mail order company, is celebrating its birthday with some special offers on blank discs. For every 10 5.25in. discs purchased it is giving away two. It is also offering a 20 percent reduction on the retail price of 3in. and 3.5in. discs. A spokesman for the company says:

"With our group buying power we have managed to force down the price of discs and our company policy is to pass any price reductions to the end-user."

NLQ for Tasword Two

Qualitas is a new print utility for Tasword which, for the first time, allows it to print in near-letter-quality mode on ordinary dot matrix printers, using equal-space justification and proportional character widths as required.

Five fonts in a variety of classic business styles are supplied and each can be modified or completely re-designed using the font editor which is included in the package. Each font contains the full 96-character Spectrum set, and underlined and emphasised characters can be selected using graphics symbols.

Qualitas uses two passes of the printhead and micro line-feeds to achieve results comparable with purpose-built NLQ printers. It is suitable for use with all printers which are fully-compatible with the Epson RX80.

The Tasword Two version will cost £7.95, followed by the Tasword Three version at £8.95. Both packages will be available by via mail order post free in the U.K.

GLP – now twice as fast

Centronics has recently announced a 100 percent increase in the print speed of its Great Little Printer which can now produce draft print at 100cps and NLQ printing at 25cps. For £199 the GLP offers a wide range of features. They include 12 international character sets, condensed, emphasised double-strike modes, as well as superscript and underline.

Catch a falling star

Star Printers has announced a price reduction on two of its printers to re-position them in the market. The models selected for this treatment are the 18cps PowerType daisywheel printer and the 60cps stx-80 thermal printer.

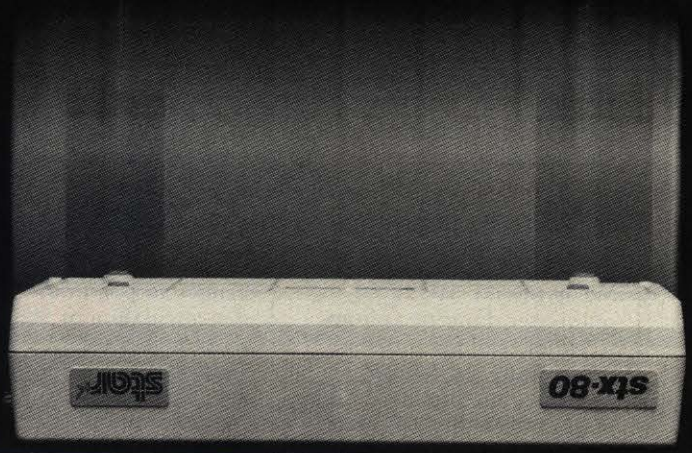
The PowerType will now retail at £229, a considerable saving on the original price of £349. The stx-80 now costs £79, a reduction of £70.

New for old

Aladdink is a new company set up to tackle the problem of the high cost of new ribbon cassettes for computer printers.

For one-third of the retail price of cassettes the company will re-ink the ribbon via a mail order service.

r prices on their heads.



The STX-80 has a carriage width of 80 columns, graphics and many of the features of much larger printers. It's so quiet, the only thing that will make you shout is the price!

PowerType and STX are part of a range of exceptional quality printers – With prices this good you'll go head over heels for a STAR!

Ring – 0272 217777
for more information
(24 hour manned switchboard).

star

For more information and the address of your local dealer complete the coupon and send it to Star Micronics U.K. Ltd. Craven House, 40 Uxbridge Road, London W5 2BS.

Name _____

Address _____

_____ YC08/86

Buzby – the French connection

Recent articles in the *London Standard* and *Communications* have pointed to British Telecom considering following the ambitious example set by the French with the Teletel system and giving away "thousands" of free Prestel terminals in an effort to have the British viewdata system more widely accepted.

Prestel has 70,000 registered accounts compared to the Government-subsidised Teletel system in France, which has more than one million terminals installed. The idea in France is that the Teletel system is a futuristic alternative to the telephone directory. Directory calls are free for the first few minutes but the same Teletel sets can be also used to access commercial databases.

The Teletel system has cost DGT, the French equivalent of BT, and the French government several hundred million pounds but DGT is confident that its initial investment will be recouped in the next decade by reduced operating costs, like not having to print directories and employing directory telephonists, and extra telephone traffic. The system appears to be reasonably popular among business users but home users have proved a tougher nut to crack.

In reality, it seems that recent excitement about the rumours concerning the thoughts of BT on a British Teletel might be premature. The indications are that a report or feasibility study has been commissioned with the idea of increasing the number of Prestel users by reducing terminal equipment costs.

The possibility is that BT, in its current state, will be unable to act on any recommendations because of its monopoly status in U.K. telecomms. It is likely that Government intervention would be necessary before the French example could be followed.

Free Telex

Database Publications managing director Derek Meakin has announced that subscribers to the Microlink service on the BT Telecom Gold will now be able to receive Telex messages free. Prior to this, each incoming Telex cost the recipient 50 pence plus VAT. The BT Gold Telex facility is optional but has proved very popular with Microlink members, with around 50 percent opting for the Telex facility.

The figure should be considerably higher now the charge has been removed and that brings the Microlink Telex service in line with Prestel, where Telex is standard and also where incoming Telex messages have always been free to recipients.

Low-cost data

Adding fuel to the speculation about the BT look at subsidised Prestel terminals was news that Prestel had approached several leading viewdata terminal manufacturers requesting tenders for supplying extremely low-cost Prestel adaptors, possibly around the £50 mark.

Although neither Prestel nor any of the manufacturers will comment, we understand that invitations to tender for low-cost adaptors may be for a specialised marketing drive by one of the Prestel business marketing departments and nothing to do with the BT story regarding the possible request for adaptors.

BABT approval – a question of time

In the wake of widespread criticism about the costs and delays involved in having telecomms equipment approved, BABT, the body charged with undertaking approvals, appears to be responding. Liberal spokesman for Trade and Industry Paddy Ashdown tabled a question in the House of Commons urging the Government to take action over the BABT approvals "problem".

The Liberal interest in the affair was prompted by the managing director of Kirk Automation, Kevin Kirk, who designed and manufactures the Magic and Voyager modems. Those modems needed almost six months to gain full BABT approval.

The head of BABT, John Vevers, announced recently that initially two extra engineers would be recruited to help reduce the approvals backlog and more might be employed later. Everyone concerned is keenly awaiting the verdict of a working party which has been looking into the whole BABT approval process, which Ashdown claims is inadequate and so requires replacing.

New EMS

A new electronic messaging service originating from Germany has started operating recently in the U.K. Geonet is a BT Gold-style network with mailbox and Telex facilities linked to the BT PSS network, permitting local telephone access to the system to most U.K. users.

More details from Geonet, Mackeson Road, London NW3 2LU. Tel: 01-267 0188.

Shades of Micronet

While the BT MUSE multi-user dungeon continues to suffer teething problems months after its launch, Micronet has announced that it will be featuring its own MUD, called Shades, running on a DEC PDP-11 with a gateway to Prestel from East Grinstead.

Shades will cost users a competitive 99 pence per hour and there is no registration fee. Although MUD is not really anything new, Micronet technical director Mike Brown is quick to point out that the implementation of Shades MUD makes use of a new colour-enhanced 80- to 40-column screen conversion process at the Prestel end of the gateway link.

Colours are added to the plain incoming 80-column scrolling text to indicate the latest text updates to the screen, because Prestel screens do not scroll physically. Old text is over-written by the latest text from top to bottom, returning to the top when the bottom of the incoming-text window is reached. Below that window is a smaller one reserved for typed instructions, thus avoiding the problem of incoming real-time text over-writing your commands as they are typed-in.

There is already ambitious talk of using the same 80- down to 40-column colour-enhanced conversion process in conjunction with other databases via PSS and even International PSS to the States.

This chart is based on the *MicroScope* chart as compiled by Gallup.

MicroScope GALLUP

MicroScope is the weekly trade paper of the microcomputer industry. If your computer store doesn't display the latest *MicroScope* chart, ask the manager to call Mark Salmon on 01-631 1433 — we'll send a copy every week.

THE CHARTS

TOP 20

1	GREEN BERET	IMAGINE	SP CO AM
2	GHOSTS & GOBLINS	ELITE	SP CO AM
3	WORLD CUP CARNIVAL	U.S. GOLD	SP CO AM C16
4	WAY OF THE TIGER	GREMLIN GRAPHICS	SP CO AM MS
5	BIGGLES	MIRRORSOFT	SP CO AM
6	COMMANDO	ELITE	SP CO AM C16 BB EL
7	SILENT SERVICE	MICROPROSE/U.S. GOLD	SP CO AM
8	SPINDIZZY	ELECTRIC DREAMS	SP CO AM
9	BATMAN	OCEAN	SP AM
10	SOLD MILLION II	HIT SQUAD	SP CO AM
11	INTERNATIONAL KARATE	SYSTEM 3	SP CO
12	JACK THE NIPPER	GREMLIN GRAPHICS	SP AM MS
13	SABOTEUR	DURELL	SP CO AM +4
14	HEAVY ON THE MAGIK	GARGOLE GAMES	SP AM
15	BOMB JACK	ELITE	SP CO AM C16
16	NEXSUS	NEXSUS	CO
17	ELITE	ACORNSOFT/FIREBIRD	BB EL CO SP AM
18	SAMANTHA FOX STRIP POKER	MARTECH	SP CO AM MS
19	PRICE OF MAGIK	LEVEL 9	SP CO AM AT MS BB
20	LEADERBOARD	U.S. GOLD	CO

BUDGET TOP TEN

1	KIK START	MASTERTRONIC	AT C16 CO
2	FORMULA ONE SIMULATOR	MASTERTRONIC	SP C16 CO AM MS
3	NINJA MASTER	FIREBIRD	SP CO
4	THRUST	FIREBIRD	CO
5	KNIGHT TYME	MASTERTRONIC	SP AM MS
6	STREET OLYMPICS	MASTERTRONIC	C16
7	MOLECULE MAN	MASTERTRONIC	SP AM MS
8	KANE	MASTERTRONIC	CO AM
9	FINGERS MALONE	MASTERTRONIC	C16
10	VEGAS JACKPOT	MASTERTRONIC	CP CO AT C16 V2 DR

BUBBLING UNDER

CAULDRON 2	PALACE	SP CO AM
KNIGHT GAMES	ENGLISH	CO
THEATRE EUROPE	PSS	SP CO AM
VIDEO POKER	MASTERTRONIC	CO
SOLO FLIGHT	MICROPROSE/U.S. GOLD	CO
BOBBY BEARING	THE EDGE	SP
SPEED KING	MASTERTRONIC	CO
REBEL STAR	FIREBIRD	SP
CONQUEST	MASTERTRONIC	SP
UBLIDO	MASTERTRONIC	C16

MACHINE CODES:
SP = SPECTRUM; CO = COMMODORE; AM = AMSTRAD; MS = MSX; AT = ATARI; V2 = VIC20

Thalamus – keeping ahead of the crowd

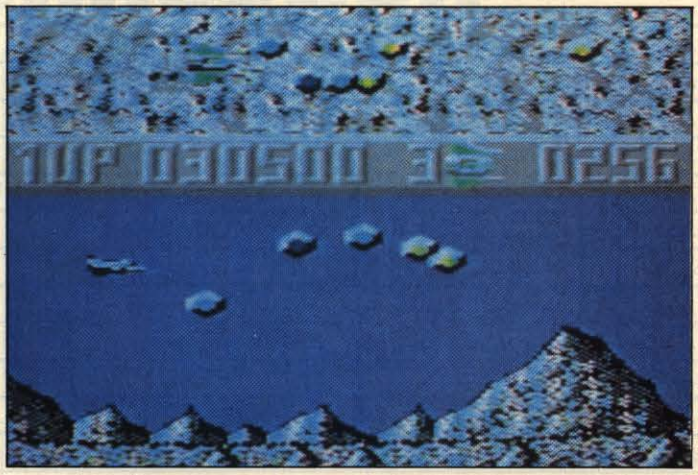
Software houses have been disappearing by the score in the last year or two. Even well-known companies have been fading gradually into the unknown. It is heartening, therefore, to learn of a new company which has exciting ideas about how to turn round a market which could be said to have become a little staid.

Thalamus was set up by Newsfield, publisher of three computer magazines, but the people behind Thalamus are Andrew Wright, the managing director, and Gary Liddon, the technical executive. Wright began his career as a software demonstrator for Hamleys when the Atari VCS was new. From there he graduated to Activision, where after two years he became press officer and the man behind publicity of such classics as *Ballblazer* and *Spin Dizzy*.

Liddon has moved around the software industry, including stops at places as diverse as Domark, where he was a technical assistant, to Zzap, where he reviewed games for the Commodore 64.

Thalamus began with a heated discussion about the state of the software industry. Wright and Liddon argued that there was no software house which produced consistently good software or that if they produced good software, they failed to market it successfully.

When, at the Commodore Show in May, Wright saw so much high-quality software which had not yet been snapped-up by any software house, he went to Roger Kean and Oliver Frey at Newsfield and started the ball rolling.



Having made the decision, Thalamus started work in earnest in June. It was decided that, so as not to become bogged down, Thalamus would concentrate on the programs and leave the distribution to someone else, although who that will be is as yet undecided.

It was the Commodore Show which provided Thalamus with its first game. While on the Zzap stand, a young Norwegian student loaded a prototype of a game he was writing for the Commodore 64/128. The untitled game impressed Thalamus so much that it was immediately snapped-up. Now provisionally titled *Finnblast*, it promises to be the ultimate in shoot-'em-ups, with a twin-view, horizontally-scrolling screen and excellent graphics.

Although Finnblast obviously owes a little to the likes of *Uridium* and *Z*, the different landscapes, including Norwegian fjords and futuristic cityscapes, make the game something special.

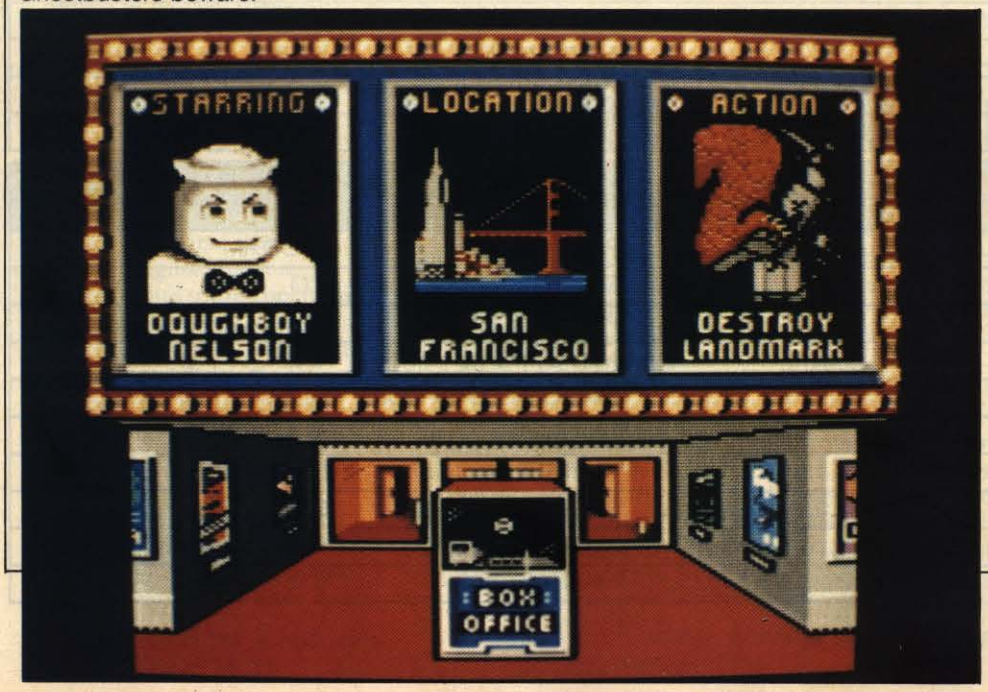
As you can see from the exclusive *Your Computer* screenshot, Finnblast promises to be something special. Finnblast is almost completed. Thalamus wants the game to be perfect and therefore is waiting until the PCW Show in September to display the finished product.

After Finnblast, Thalamus plans to release a number of other titles, at least one of which will be across all formats. It is also talking to a number of top programmers, many of whom might well be writing games for the company.

Wright summed-up the Thalamus philosophy well when he said: "Thalamus was set up as a result of our dissatisfaction with games being produced for home micros. We intend to change this."

If all its games prove to be as good as the version of Finnblast, Thalamus will go a long way to achieving its goal.

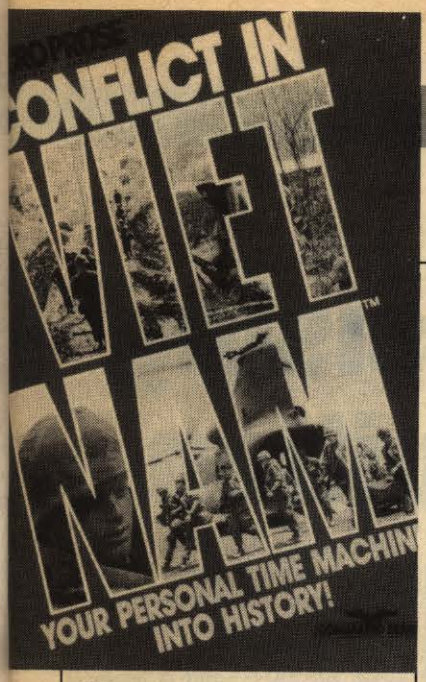
Ghostbusters beware.



Monster hit for Epyx

Epyx, consistently one of the better U.S. software houses, has just announced its newest game. Called *The Movie Monster Game,* it involves controlling one of six famous film monsters, including Godzilla and King Cream Puff, and then acting various film storylines.

Having decided in which city the action is to take place, the monster chooses a plot. They vary from rescuing a fair maiden, trampling famous landmarks, or just eating everything in sight. Graphically excellent, as with most previous Epyx releases, it will be released by U.S. Gold for the Commodore 64/128.



Games galore from Rainbird

Rainbird, the slightly more serious side of the British Telecom software division, recently announced two new sets of adventures for the Commodore 64, Spectrum and Amstrad. The first, *Jewels of Darkness,* is a classic adventure trilogy from Level 9, all of whose games are now to be distributed by Rainbird, containing *Colossal Adventure, Adventure Quest,* and *Dungeon Adventure.*

Featuring more than 500 illustrated locations, together with a new improved parser, Jewels of Darkness represents the fruits of many years' work, even if they are all re-releases. Available either as a three-cassette pack or on disc, Jewels of Darkness will cost £14.95.

Another new adventure Rainbird will be releasing is Magnetic Scrolls *The Pawn* on the Commodore 64, Atari ST, and Amiga. Set in the mythical world of Kerovnia, The Pawn features some of the best graphics seen on the Commodore 64, courtesy of Compunet artist Bob Stevenson.

Designed for hardened adventurers and beginners alike, The Pawn is an adventure which requires the user to interact with almost all of the characters, a task made a great deal easier by the excellent context handling of the parser. Costing £19.95 for the Commodore 64, the Pawn will be available only on disc and is expected to be completed by September.

New conflict

Microprose, the U.S. software house which brought *Silent Service* to our shores, has just announced its newest release. Called *Conflict in Vietnam,* it is the third in the Microprose Command Series of games.

Available for the Commodore 64 and 128, it is a truly comprehensive micro-representation of the Vietnam war, starting with the end of French rule in 1954 and continuing all the way through to the North Vietnamese assault on Quang Tri in 1972.

Included in the game are extensive notes and documentation, which should make it a joy for wargamers to play, whether or not they are interested in that particular war.

If Conflict in Vietnam is half as good as the other Microprose war games, it should be worth waiting for. Conflict in Vietnam will be released soon by U.S. Gold.

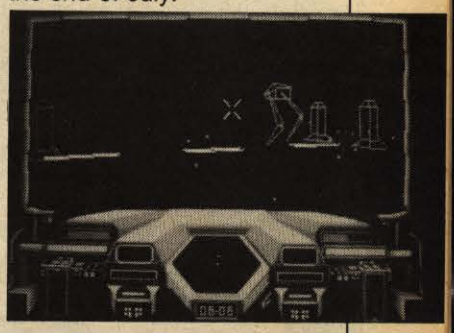
Starglider for ST

Another game from Rainbird which looks very near to completion is *Starglider* for the Atari ST range of micros. Programmed by Jez San, Starglider is a three-dimensional space game featuring some of the best graphics and animation yet seen on the Atari.

Hot on the heels of the Spectrum game, Ocean has released the first arcade game for the Amstrad PCW8256 word processor. Identical as far as gameplay is concerned, Ocean has managed to create some very impressive graphics – even if they are green.

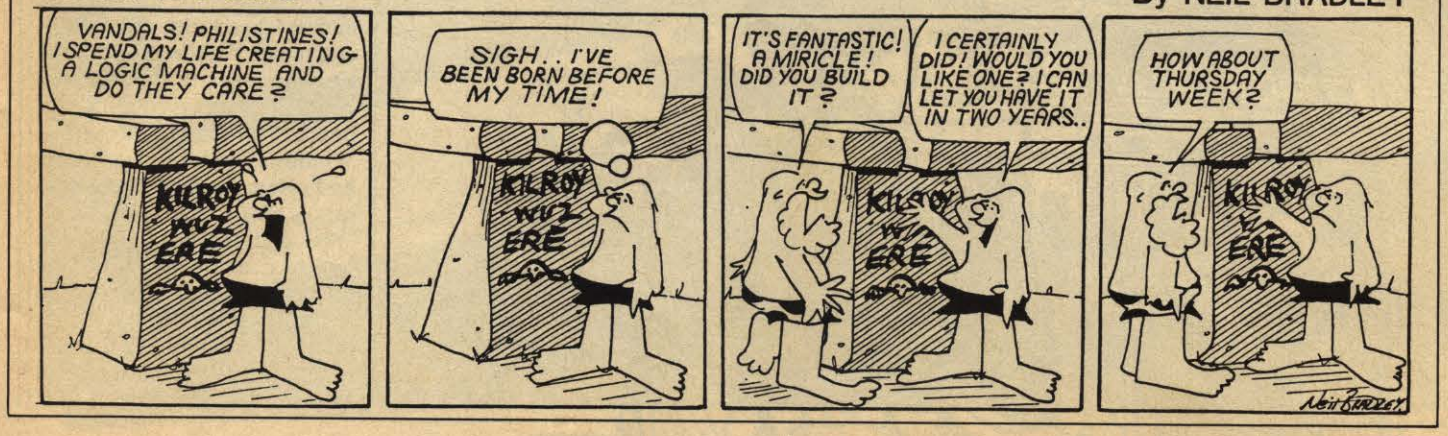
Control of *Batman* is via re-definable keys, making delicate jumps difficult, though by no means impossible. With more than 150 rooms, spread over eight levels, to explore, and some really fiendish puzzles, Batman is a must for all 8256 owners who have even the slightest desire to play games. Ocean has even managed to persuade the Amstrad to play a strangled rendition of Batman's theme tune.

Also getting in on the act is Global Software, which is releasing a new adventure game *The Monsters Of Murdac.* Converted to the PCW by Locomotive Software, the group responsible for Locoscript, the game promises to be the first in a series which will include *Philosopher's Quest* and *Countdown to Doom,* both old Acornsoft titles. Costing £19.95, Monsters of Murdac was due for release at the end of July.



MAN LOGIC

By NEIL BRADLEY



XEN – emphasising value of intuition

Geof Wheelwright investigates the micro which tries to be all things to all users.

There are American dreams, French dreams and even Caribbean dreams but few are as rare and beautiful as the British dream. In the business computer market, the ultimate British business micro dream for the last two years has been embodied in a machine from Apricot – formerly ACT – Computers of Birmingham.

The company range of powerful and impressive MS-DOS micros has won a collection of British computing and design awards, including the British Microcomputing Award for the last two years, and survives despite constant predictions of doom and gloom.

The key to its current run of success is the new Apricot XEN – pronounced Zen, as in the Eastern philosophy – probably the most appropriately-named machine to be featured in the Dream Machine corner of *Your Computer*. I was fortunate to mediate on this British-built beauty for a few weeks and found myself dreaming that Apricot would not take back the machine.

Faster

It looks, at least on the screen, like a Macintosh, is faster than the fastest IBM PC – the AT, featured in last month's reveries – and runs much of its own software as well as some written for the PC and AT. Sufficient of this sleepy vagueness; what about the real-life details of the Apricot flagship?

The XEN uses an Intel 80286 processor running at 8MHz, offers 720K 3.5in. floppy discs with an optional 3.5in. 20MB hard disc for storage, includes at least 512K of RAM, runs under Microsoft Windows and uses a much-improved backlit version of the Apricot keyboard Microscreen.

If that were not enough to set you dreaming, think for a moment about what you could do with the 5MB of memory the machine can use, the two 20MB hard discs it can hold and the rather swish on-board telephone/modem which you can attach to the left-hand side of the keyboard.

The review machine was a monochrome 1MB XEN with a single 720K floppy disc and a 20MB hard disc. It had the high-resolution Macintosh-style paper-white screen and the Apricot tracker-ball mouse system.

On first inspection, Apricot must be given a good deal of credit for attempting a vast amount of innovation in the new machine, although it is not taken to the ludicrous lengths of the company's speech-input portable with the built-in microphone. The casing is manufactured in a subdued off-white colour and both screen and keyboard are delivered in the same creamy XEN livery.

The main CPU box houses up to three storage devices – two floppies and a hard disc, two hard discs and a floppy – and is kept small by the use of an external power supply with a sufficiently long cable so that it can be left on the floor while you slide the small CPU unit beneath the large monitor.

The keyboard is relatively large, without being over-dominating. While the keys are spaced far enough apart to keep your fingers from jamming on them and a large ENTER key, a la IBM PC AT, is used, the function keys and Apricot Microscreen keys are designed to run along the top of the keyboard to prevent it being too long.

The keyboard is light to the touch without feeling too plastic, while the standard layout ensures compatibility when you run the machine with IBM PC AT applications.

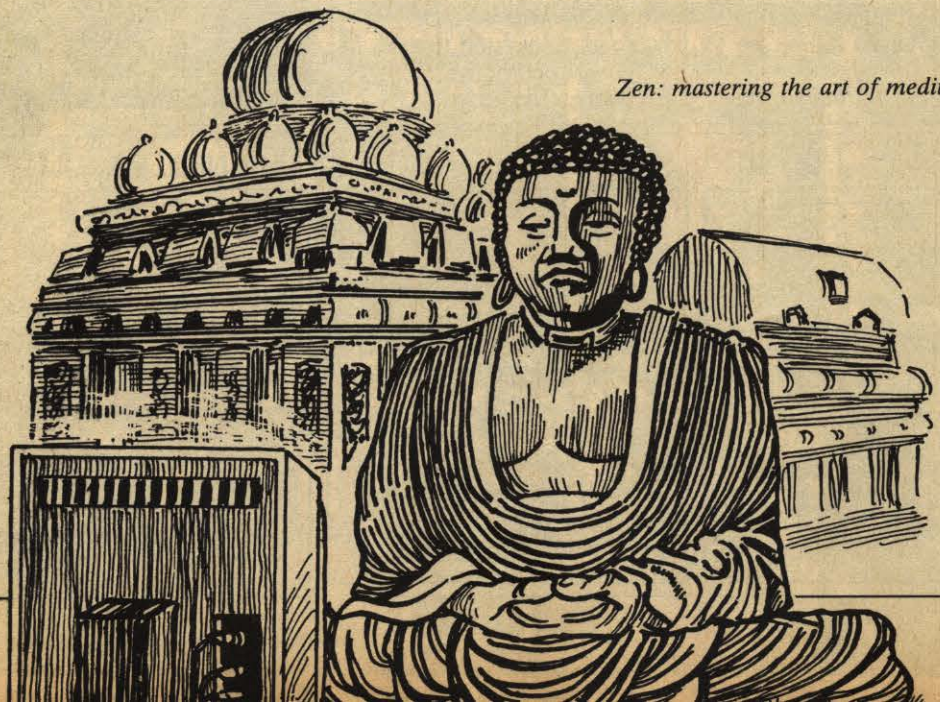
The Apricot roller-ball/mouse plugs into the back of the keyboard and rests just to the right of the keyboard. The mouse buttons are on the side of the mouse, with the roller at the top. Thus you can use the mouse by rolling the ball with the palm of the hand and pressing the side buttons or by turning it over and using it in the same way as a regular mouse.

I found that it worked much better by leaving it in a stationary position and operating it like a tracker-ball. That also meant that I did not need the amount of free desk-space required normally to operate a mouse-driven machine.

Real star

The real star in the system, however, must be the software and the speed with which XEN can run it. XEN was one of the first machines to be delivered bundled with the Microsoft impressive Macintosh-like Windows multi-tasking system and offers the best implementation of it I have seen.

In addition to a desk-top interface and a multi-tasking environment which allows you to run a number of applications in memory at once, using a sparse memory management technique, Windows also



Zen: mastering the art of meditation.

includes a number of its own applications.

Included in the price of the XEN are Windows Write, a word processor which bears more than a passing resemblance to its Macintosh forebear; Windows Paint, again like the Mac original; Windows Terminal, a communications program; Windows Cardfile, a small card-orientated database; Windows Calc, an on-screen pop-up calculator; Windows Calendar, a diary program; and the inevitable Windows Reversi strategy game.

Advantages

Windows, however, has several advantages over the pioneering icon-driven interface offered by the Mac and more recent imitators such as the Atari ST range. First and foremost, it is multi-tasking. That means that if, for example, I want to use Lotus 1-2-3 as my spreadsheet, Microsoft Word as my word processor and Windows Terminal as my communications software, I can have all those programs running and in memory at once on a 1MB XEN.

On most IBM PC machines running Windows, you would find that everything runs abominably slowly when you try to use so many applications at once but because the XEN uses an 80286 running at a full 8MHz with no wait states, it makes switching between applications almost instantaneous.

In terms of non-Windows software, the XEN is compatible with almost as many machines as it possibly can be. The BIOS in the machine is designed so that it should run all the software written for the original Apricot PC, as well as that written for the newer and now extinct F1 range of Apricot machines.

Waiting game

In addition to that existing software base, the XEN will run a large number of off-the-shelf IBM PC programs using a program called SoftClone, a PC software emulator, and an external 5.25in. disc drive. It should run software for the new IBM PC Convertible, which also uses 720K 3.5in. disc drives, without the use of the external 5.25in. drive but we shall have to wait until the portable machine arrives on these shores before that feature is of any consequence.

The XEN also claims a measure of AT compatibility as well, with Apricot offering an add-on box which lets the XEN use AT hardware expansion cards for extra memory and networking.

In short, the XEN is a business micro which tries to be all things to all users – and it's British. It has the mouse and desk-top interface which make it look like a Mac, a processing speed superior to some dedicated multi-user systems, compatibility with almost everything in sight – in theory, it should even run the BBC Basic emulation package developed for the F1 series of Apricot machines – and at a price most businesses, although not many home users, can realistically dream about. Prices for the XEN start at about £2,500 and it is available through the Apricot national network of dealers.

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Ram Electronics – from ROMs to riches

Mary Sargent looks closely at Ram, a fast-growing company.

Ram is one of the companies which Sir Clive Sinclair thanked at the U.K. launch of the 128 Spectrum for the support given to Sinclair Research during the difficulties of 1985. It was an acknowledgment which marks a definite change in attitude towards manufacturers of peripherals and software which kept the Spectrum alive and Ram is pleased.

Mary Shoebridge, managing director, feels that the company which she and her husband Martin own, has been forgiven for producing the Spectrum Turbo, which founded the fortunes of Ram and pushed the Sinclair Research product, Interface 2, out of the market.

Eight years ago, Martin Shoebridge was thinking cars rather than micros. An abiding interest in motor rallying as a hobby led to his making electronic trip meters in the back bedroom, while earning a living as an electronics engineer. Nissan bought a consignment to be fitted to its Datsun rally cars and one of the Range Rovers in the rally which stranded Mark Thatcher in the Sahara was using a Shoebridge trip meter. Thatcher's car did not have one, which may be why he was lost.

Specialist shop

The meters kept the embryonic company ticking-over as a mail order concern until 1981, when Mary forsook her bank-clerk's desk to open a shop at Fleet, Hampshire. Ram Electronics (Fleet) sold watches, calculators, CB radio goods, electronic games and the occasional ZX-81. As the various electronic crazes died, the shop stocked more and different micros until it became, and still is, a wholly specialist computer shop, dealing in hardware and software, with the emphasis on advice and practical help for the customer.

By May, 1983, they estimated "there was just about enough money from the shop to support Martin and the mortgage", so he ceased working for other people and sat above the shop designing hardware add-ons for Vic-20s and Sinclair micros. His wife gave him three months to become financially viable in his own right. They agreed that if the shop was still not supporting him after that he would take another job but demand for his products was such that by December, 1983, he was not only earning his keep but had run out of space.

No panic

"Martin wanted a factory but I prefer to take things in steps rather than leaps," says Mary. "So we put a Portakabin in the back garden." When it was delivered, the lorry carrying it backed into an electricity substation and knocked out the whole of the Fleet electricity supply for several hours. By June, 1984, Martin needed his factory anyway.

The shop was still profitable but it was obvious that the retail trend was downwards and, in April, 1984, the Shoebridges took a conscious gamble to turn a healthy business into a wealthy one. They launched the Spectrum Turbo, which used a specially-designed ULA chip and cost Ram something like £80,000 to develop. It was a twin-joystick port, with a socket for ROM-based software and if it had not worked, Ram would have been out of business.

As it was, it was Sinclair which lost money on the rival Interface 2 and Ram went on to rent 2,500 sq. ft. of local factory space for a year. In June, 1985, the company moved into a new industrial unit in its own right and has recently taken another. Like Topsy, it just grows.

A contract to supply Dixons with joystick interfaces arrived on Ram's doorstep in the last week of July, 1985 while the directors were on holiday. Fortunately the production manager coped. As Mary's brother-in-law, he has more than a passing interest in the survival of the firm. The production process had been streamlined to the point where the vast quantities Dixons needed could be produced and packed for despatch with the minimum of panic. It merely involved the directors working until two in the morning but they delivered 170,000 units to Dixons in five months. It is in line with the Ram philosophy about retailers. "They shout and we jump."

In September, Ram employed a technical manager, James North-Hearn, who arrived in time to help with the Dixons deal, and with the early stages of a product which Ram believes will be among the top-selling micro peripherals of 1986. This is the Games Killer for the Commodore 64, copyrighted and marketed by Robtek, but manufactured by Ram, which was also involved in its design. Together with the renewed demand for Spectrum peripherals because of the launch of the 128, Ram is confident that Games Killer will give it a healthy share of the home micro sales this year.

The company, however, does not rely solely on British or home micro sales. This will also be the year of a concerted export initiative, starting with the U.S. launch of Games Killer at Disney World in March. A steady penetration of the business market, with products for the IBM and Apricot PCs has offset the dangers of the seasonal troughs in demand which have spelt disaster for so many small companies.

Ram may not be the highest-profile company in the business but it combines courage with commonsense. It is just about to "waste ten grand for the first time ever," according to Martin, on office partitions. There still will be no flash sports cars nor oak desks for suited executives. There is just a thriving company with a happy bank manager.

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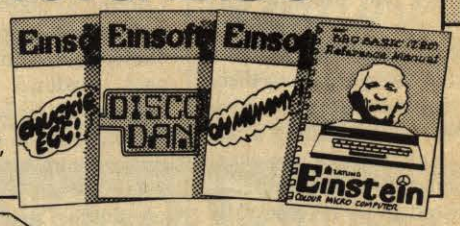
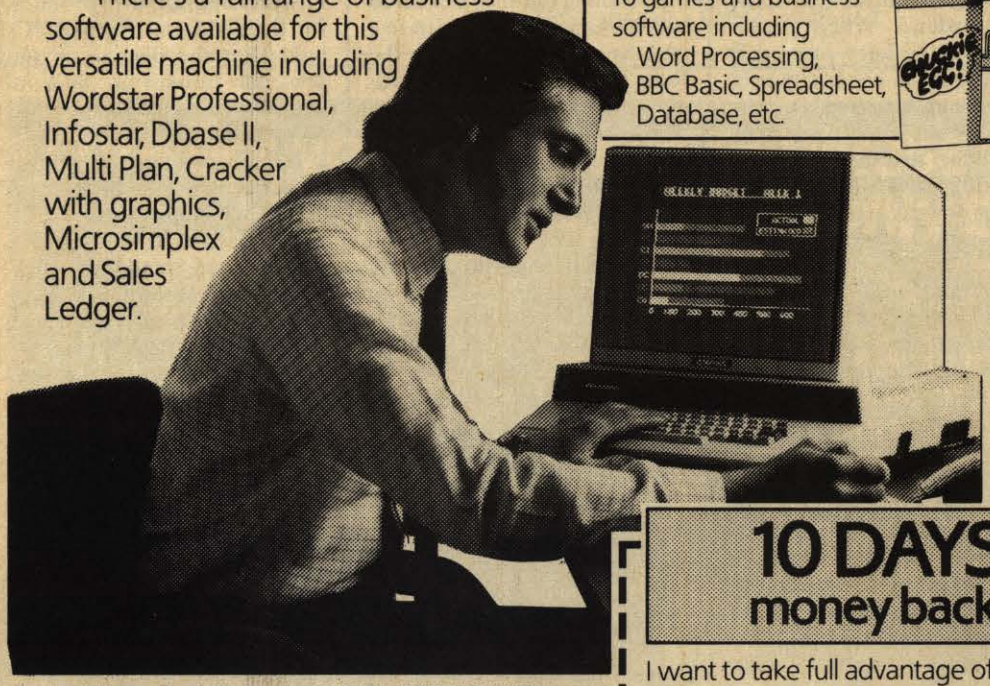


There's a full range of business software available for this versatile machine including Wordstar Professional, Infostar, Dbase II, Multi Plan, Cracker with graphics, Microsimplex and Sales Ledger.



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Spirit in the sky

Ian Burley looks at the new Spectre modem.

Anyone who has contemplated using a 48K Sinclair Spectrum for comms, let alone the new Spectrum 128, will have encountered a rather solid brick wall, namely the lack of a "proper" RS232 interface capable of modem-compatible baud rates to allow connection to standard modems. Until now, the job of interfacing Spectrums to the burgeoning world of communications has been left almost entirely to the venerable and infamous Prism VTX5000 modem from OEL Ltd.

The VTX was a bare-essentials serial interface connected to a simple modem card, all in one box. It attached via the Spectrum edge connector expansion bus. The VTX had a straightforward Prestel/viewdata terminal program on ROM and so offered a simple but effective plug-in-and-go Prestel solution.

The Spectrum 128 arrives and, horror of horrors, the VTX5000 which 99 percent of Spectrum comms users use will not work with it. Meanwhile, Spectrum owners wanting to access 300-baud bulletin boards, or use standard RS232 modems, are either becoming very frustrated or resorting to upmarket micros. Spotting the market gap last year, Laurence Cook, formerly of OEL and hardware designer of the VTX5000, set up Spectre Communications Ltd.

Cook has produced a very attractive and serious alternative to the VTX, offering a full RS232 interface with excellent multi-purpose terminal software written by Dave Gorski. The new Spectre comms pack was designed with parts of Tandata Sinclair QL Qcom modem system in mind. Some may recall that the Qcom system began life as an OEL project.

With co-operation from Tandata, Cook has produced an RS232-based comms module housed in the same black stacking case used by the part of the Tandata Sinclair QL Inside the Spectre comms pack is an 8251 UART situated on a very neat board, with a 16K ROM containing a full viewdata/scrolling terminal. There are two LEDs to indicate power and on-line status, while a pair of buttons select full- or half-duplex mode and on/off line status.

Perhaps the obvious modem to connect to the Spectre unit is the matched plug-in stacking Tandata Qmod which will be available complete with comms pack at a special combined price of around £80 plus VAT, with the comms pack and Qmod being £50 plus VAT each separately. Qmod is satisfactory for 1,200 baud but to access 300-baud systems you have the alternative nine-pin joystick D-type connector to attach standard 300/300 or 1,200/75 baud RS232 modems. Unfortunately reverse Prestel – 1,200TX 75RX – is not possible on the Spectre unit, though 1,200/1,200 half-duplex is possible for user-to-user link-ups, with suitable software.

To indicate 300-baud operation to the Spectre unit, two of the nine D connector pinouts need to be bridged. That odd feature could require something like a switch incorporated into the RS232 cable when linking multi-standard modems. Spectre will supply or make up necessary cables to order for a small charge.

The Spectre unit is connected to the Spectrum bus expansion edge connector via a three-way ribbon cable, with the Spectre tapping off the centre socket. There is no through-port so the end of the ribbon cable acts as the expansion bus continuation. For some peripherals that is satisfactory but others refuse to rest firmly on the end of the cable and flop about. Unfortunately you should expect several popular peripherals to clash with the Spectre unit while it is plugged in but there seem to be no major problems with Interface 1 and there is no need to power-up your Spectrum directly from the mains, as with the VTX.

Who better than Gorski, of VTX Editor fame, to write the firmware in the Spectre unit? What we have is a considerably tidied and streamlined version of the Editor, now almost completely in machine code though still retaining the ability to be user-extended or enhanced from Basic.

On power-up, you are presented with a 10-option main menu:

0. Log on
1. Viewdata
2. Save frame
3. View frame
4. Print
5. Downloader
6. Mailbox message
7. Edit upload frame
8. Scrolling bulletin boards
9. ZX restart

If you are using a Spectrum 128, 48K Basic is used and the unit behaves as if it was attached to a standard 48K Spectrum, unless you incorporate your own routines to extend the frame buffer. Access to main store – Microdrives or disc – is handled by Basic routines to maintain command compatibility where possible.

Immediately there is a different look to the screen when you first see the Spectre working, as Gorksi has re-designed the VTX character set to good effect. In Prestel mode there are subtle enhancements to the way double-height characters are handled; many of the old minor bugs of VTX Editor are absent from Spectre Editor. Held graphics are also improved.

Twenty-six mailbox or viewdata frames can be stored in memory at one time, identified alphabetically. There is an improved frame editor and mailbox send function with the option of sending a sequence of mailboxes edited previously and stored in memory, with auto log-off at the end.

An Epson-compatible monotone graphics dump has been included and is reasonably fast, though a much faster text-only print option may be included in later versions of the ROM, firmware upgrades possibly being an attractive feature. It is hoped that frame-tagging will be added later, too. There is also a graphics dump to ZX printer and compatibles.

Finally, there is a new scrolling terminal routine which does not suffer from the common VTX problem of character loss, especially with XON/XOFF flow control on. Unfortunately XMODEM file transfer protocols are not present, though no doubt someone will rectify that sooner or later.

The Spectre comms pack is a much-needed boost to Spectrum comms abilities. The system is not perfect; there is no auto-dial facility and the Tandata QCALL dialling unit cannot be used; it was found that the Spectrum power supply could not drive the full Qcom stacking system. The Spectre unit, however, is a much-needed replacement for the ageing VTX5000 and is considerably more versatile. Above all, you do not need to load VTX ROM overlays all the time and the Spectre unit is much more reliable to use.

Spectre Communications, The Old School House, Tenter Row, Crosby Ravensworth, Penrith, Cumbria. Prestel MBX 109315362. Tel: 0931 5362 or 0204 57293.

AMSTRAD

At around £35, the Cirkit acoustic is probably the cheapest modem available for the Amstrad CPC range. It operates on 1,200/75 baud, allowing access to Prestel, Micronet, BT Gold and several others. The price includes the interface and companion software. The interface can be used with other modems offering a wider variety of baud rates and it can also be used to interface other RS232 devices. The software provides full Prestel support and is available on either tape or disc.

SPECTRUM

The Mini-Max modem from KDS Electronics represents superb value. It connects directly to the BT lines and features 300/300 and full duplex 1,200/75 operation. It also has an auto-dial mode and for an additional £15 an add-on board will give you an auto-answer facility as well. The modem will operate with any computer with an RS232 interface.

COMMODORE

The direct-connect Compunet modem offers the Commodore 64 user access to Compunet; three months' subscription is included in the price. A baud rate of 1,200/75 means that users could access Prestel if they so desired but Compunet, being a specialist database, can offer much more of interest to the Commodore user than Prestel or any of the other commercial databases could ever hope to do. No interface is required.

BBC

The recently BABT-approved Datastar magic modem is good value for the BBC micro, long hailed as the king of the communications computer world. The modem has a six-way rotary switch and LED indicators to show which mode you are in. The Companion software costs around £20 and is controlled by the function keys; 1,200/75 and 300/300 baud rates are available, giving access to Prestel and many private bulletin boards.

SUPPLIERS' GUIDE

	NAME	SUPPLIER
1	Cirkit Acoustic Modem	Cirkit (0992) 444111
2	Mini Max Modem	K D S Electronics (04853) 2076
3	Micronet VTX 5000	Modem House (0392) 69295
4	Magic Modem	Jansz Computer Communications 417a Hornsey Road, London N17
5	Tandata TM110 V23	Tandata (06845) 68421
6	Voyager 7	Modem House (0392) 69295
7	Datachat 1223	GEC Communications (0203) 452152
8	Intermover M5023	Modular Technology (0869) 253361
9	64 Multi Modem	Miracle Technology (0473) 50504
10	Voyager 11	Modem House (0392) 69295
11	Pace Nightingale	Pace Micro Technology (0274) 488211
12	Digisolve ChipChat	Digisolve (0977) 513141
13	Miracle Technology WS2000	Miracle Technology (0473) 50504
14	Amstrad Modem	K D S Electronics (04853) 2076
15	Tandata TM200	Tandata (06845) 68421
16	Dacom DSL2123AD	Da Com Systems (0908) 675511
17	Pace 2123S	Pace Micro Technology (0274) 488211
18	Modular Technology M4000	Modular Technology (0869) 253361
19	Dacom 2123GT	D Com Systems (0908) 675511
20	Miracle Technology WS3000	Miracle Technology (0473) 50504
21	Pace 2400S	Pace Micro Technology (0274) 488211

Modem route

Every branch of computing has its own set of jargon. With word processors you can cut, paste, insert or zap. With joysticks you can have auto-fire, pistol grips and microswitches and with monitors you can have RGBs, dual frequency and monochrome display. In most cases, common sense will give you a rough idea of what the jargon means but there is one area of computing where you might need a little help.

Communications is an area filled with seemingly meaningless phrases but one which offers rich rewards to those who dare to enter; to link your computer to the world of unlimited telephone bills, all you need is a modem.

The word modem is an abbreviation of modulator-demodulator. It is a device which translates the electronic language of a computer into a series of sound waves and vice versa. Those sounds are then sent down a telephone line to whatever service you choose.

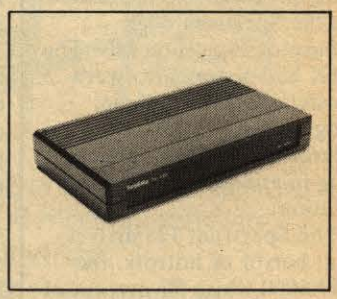
All modems require software to work. With some models such as the Miracle Technology 64 multimodem it is built-in, while others like the Datastar Magic modem require a separate package. Software varies in price depending on the machine and the number of features you want.

Auto-dialling

More expensive systems may incorporate more facilities such as auto-dialling and answering, on-screen clocks and memory buffers to store incoming data. Such features are really worth buying only if you intend to make full use of them. An auto-answer machine, combined with the correct software package, will allow you to create your own bulletin board with whatever services you like, but unless you do not use your telephone a great deal, it is best to have a separate line installed.

Modems in the same price range tend to have similar functions. The more expensive models have several additional features but the value is dependent on the purpose for which you intend to use it most.

The baud rate, the speed at which the modem sends and receives data, is an important consideration. Some systems send and receive data at 300/300 baud, the equivalent of 30 characters per second, but more recently many viewdata and bulletin board systems have adopted the Prestel standard of 1,200/75. While more and more systems are using that speed, the number



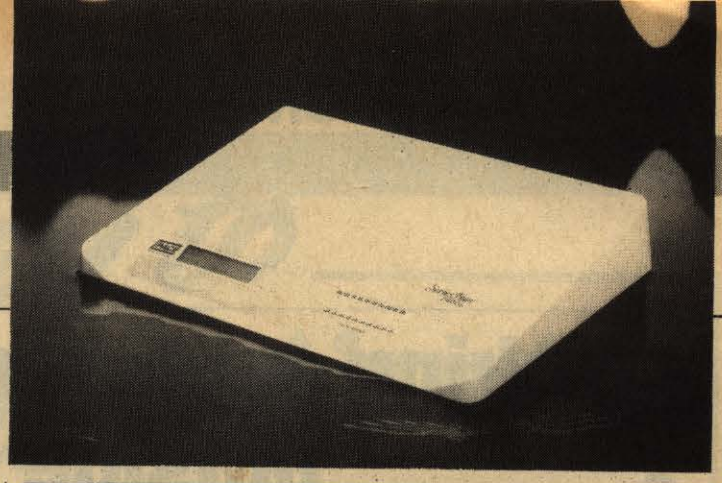
still using 300/300 is sufficient to justify buying a modem which can handle both.

Faster speeds are available but they cost considerably more and can really be used only with the commercial electronic mail systems; they are geared more towards business than home users.

Most modern modems connect directly into the telephone socket. For those whose homes use older-type connections, acoustically-coupled modems which incorporate rubber cups to fit on the handset are available but they are often more difficult to use.

Modems capable of faster speeds such as 1,200/1,200 are available but they cost considerably more and can really be used only with commercial electronic mail systems which are geared more towards business rather than home users.

The operating speed of a modem is sometimes defined by the V system. That relates



e to success

A good modem can cost as much as a computer. Anthony Thompson investigates.

to a set of recommendations for data transmission by telephone made by the United Nations technical committee. V21 refers to the 300/300 system while V23 includes 1,200/75. There is also V22, the 1,200/1,200 system, and others which define modems which can auto-dial, auto-answer and so on.

Modems are sometimes also defined as being intelligent or Hayes-compatible; the latter refers to an American standard and the AT command set which some software packages use. Using this system, to dial a number from the keyboard you type ATD followed by the number and return. The AT command attracts the attention of the modem while the D tells the modem to dial. Variations of the command set include help functions and dialling from memory.

Most modern modems connect directly into a telephone socket. For those whose homes use older-type connections, acoustically-coupled modems which incorporate rubber cups to fit on the handset are available but they are often more difficult to use.

A final point to mention is to ensure that the modem you buy is BABT-approved. If it is, it will display the green approval sticker – it is a criminal offence to use a non-approved modem on the BT network.

NEW RELEASES

The new series four from Pace Micro Technology are intelligent modems offering high-speed operation. There are three models, ranging from the 2123S which operates at V21 and V23 to the 2400S which can operate at V21, V22, V22bis and V23. All the models have a 32-character LCD display which is used to provide useful information during operation. That includes the real and elapsed time and diagnostic messages if a transmission should fail. The modem will also store up to 64 numbers which can then be dialled automatically. Further development of the internal software to include additional features such as error-correction and password security is under way.

Modem House has produced a range of multi-standard, multi-computer modems. The Voyager 7 model features built-in auto-dial and answer functions, full CCITT V21 and V23 specification and full function LED display. The basic cost is low, at around £79.95 plus VAT, but the software and interface for, say, an Amstrad CPC6128 raises the price to £159.95. That modem can also be operated anywhere in the world with an optional 110V power supply. Full bell tones, essential for communicating with American bulletin boards, are also available but only as an optional extra, because full bell-tone specifications are illegal in the U.K. and certain other countries.

NAME	PRICE	BAUD RATE	AUTO DIAL AS STANDARD	STAR RATING
1 Cirkit	£35	A,B,C,D	NO	★★★★
2 Mini-Max	£66	A,B,C	YES	★★★★
3 VTX 5000	£70	B	NO	★★
4 Magic Modem	£79	A,B	YES	★★★
5 Tandata	£99	B,D	NO	★★★
6 Voyager 7	£79	A,B,C,D	YES	★★★★
7 Datachat 1223	£89	B	NO	★★
8 Intermover M5021	£98	A	NO	★★★
9 64 MultiModem	£99	A,B,C	NO	★★★★
10 Voyager 11	£99	A,B,C,D	YES	★★★★
11 Pace Nightingale	£137	A,B	NO	★★★
12 Digisolve ChipChat	£150	A,B,D	NO	★★★
13 WS2000	£130	A,B,C,D	NO	★★★★
14 Amstrad Modem	£175	A,B,C,D	YES	★★★★
15 Tandata TM200	£199	A,B,C,D	YES	★★★
16 Dacom DSL2123AD	£255	A,B,C,D	YES	★★★★
17 Pace 2123S	£239	A,B,C	YES	★★★★
18 M4000	£282	A,B,C,D	YES	★★★
19 Dacom 2123GT	£395	A,B,C,D	YES	★★★★★
20 WS3000	£399	A,B	YES	★★★★
21 Pace 2400S	£595	A,B,C,D,E	YES	★★★★★

KEY TO BAUD RATE
A = 300/300 B = 1,200/75 C = 75/1,200 D = 1,200/1,200 E = 2,400/2,400

Linking with the world outside

There are many commercial information databases. Francis Jago compares the most popular.

One of the best-known information databases, **Telecom Gold** has the great ability of being all things to all people. For the first-time user it appears a little daunting but with perseverance it is remarkably easy to unleash the immense power of the system.

Gold is running on six Prime minicomputers. They are machines which are particularly good at handling communications and manage, unlike VAXs, to avoid dramatic reductions in speed when the system is heavily in demand. Originally, Telecom Gold was a mailbox system allowing users to send messages and documents more reliably than using the post.

For the home user, Telecom Gold provides an excellent medium for personal communications. Messages can be sent to any other subscriber at no cost, and any messages sent to you can be stored indefinitely, although the cost can mount. For more business-orientated users, Telex messages can be sent to any of the 1.5 million Telex users throughout the world.

Wide variety

To users of the Commodore 64 series of computers, including the 128, **Compunet** is a dedicated on-line system to appeal to all. Although you can access it using only the Commodore modem, Compunet provides such a wide variety of services that anyone from a games player to a small businessman will find relevant information.

What makes Compunet so good is that everyone who uses it, and estimates suggest a figure of around 5,000, uses a 64. Among those users are talented programmers, artists and musicians, all of whom put up programs for regular subscribers to download. Some of those demonstrations, such as Bob Stevenson's graphics and Rob Hubbard's music, are truly amazing.

Compunet also has a series of multi-user ideas, including MUD, a dungeons and dragons game, and chat-lines which allow people to talk in a variety of imaginary rooms. Overall, for Commodore 64 and 128 owners, Compunet is a valuable entry into the communications world.

For users who do not live near a large town, the cost of communications can very easily run into hundreds of pounds, since not only are you paying for time on the system but you are paying a phenomenal amount in direct telephone charges.

One way to avoid those charges would be to move. More practically, getting a **PSS** account would reduce your costs dramatically. Packet Switch Stream, the full name of PSS, acts by putting all your data in packets rather than a continual stream and sends them at regular intervals. Each PSS node gives you a prompt of PAD>. That stands for Packet Assembler Disassembler and in many ways explains how PSS works.

To send the data in packages it must first be assembled into the correct form and is disassembled only when it reaches the correct destination. In the U.K., PSS can give you access to most of the main information databases but it really comes into its own when used with databases in other countries.

To put PSS into perspective, it costs £6 per hour to access an American database via PSS, as opposed to more than £50 per hour to dial direct.

Although 'only' a Closed User Group within Telecom Gold, **Microlink** has grown dramatically of late and can now claim to have some of the most impressive features on any database.

Aimed originally directly at the home market, with sections for the BBC, the Apple, and more recently the Amstrad, it can now claim to be truly international, with users all over the world clamouring for its services.

As well as being able to send Telex messages very cheaply, Microlink has an excellent Telemessage service. In case you do not know, Telemessages are the little yellow envelopes which took the place of telegrams. Microlink can, for a small charge, guarantee next-day delivery of a variety of Telemessages, ranging from happy birthday to congratulations.

Small fee

For the more romantic, you can also have roses delivered through Microlink – a real lazy man's apology. Practical uses include downloadable weather maps provided by satellite and Railink, which allows you to order train tickets. One minor problem with all the services – you have to give your credit card number.

Without doubt the biggest on-line database in the U.K. is **Prestel.** With more than 330,000 pages of information Prestel is likely to have something for everyone. As with Telecom Gold, Prestel permits the user to send Telex messages all over the world, although using Prestel as a Telex machine is certainly not recommended. As an electronic mailbox, Prestel allows you to store five messages; storing any more requires mass deleting.

Where Prestel really comes into its own is as an information service. Anything from rail timetables to up-to-the-minute City prices can be obtained with only a few keystrokes. Many businesses have CUGs on Prestel and some of them can be accessed for a small fee.

As with some of the other large databases, Prestel allows you to buy certain products, such as theatre tickets, without leaving your desk.

Real alternative

Although you have to pay a separate fee on top of your Prestel subscription to access it, **Micronet** is an essential addition to Prestel for anyone interested in micros.

Comprising about 10 per-cent of the whole Prestel system, Micronet provides 365-days-a-year news and views on the world of computers. There are programs and sections for all the main home computers and Micronet has its own multi-user game called Starnet.

It is features such as the Celebrity chatlines and the excellent Sunday 'paper' which have helped Micronet become so deservedly popular.

Set up in direct competition to Telecom Gold, **One-to-One** is a very comprehensive electronic mail system. It allows the user to send and receive mail from any of the 10,000 subscribers, as well as using the Telex service to send a message to any of the Telex machines round the world.

Unlike Telecom Gold, storing messages is free, though Telex costs can mount. For people on the move, the Priority Letter Service allows you to send a message to One-to-One, where it will be typed and sent that day. For really important letters, the Courier Letter Service guarantees delivery of a letter to anywhere in the U.K. within two hours.

All those features, together with a built-in noticeboard, makes One-to-One a very real alternative to Telecom Gold.

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Seeing double

Gary Evans takes the PCW8256 to pieces.

An increasing number of PCW applications software packages require that the second disc drive of the PCW computer is installed if they are to operate at their most efficient. While it is possible to use the majority of PCW software in a single-drive machine, packages from word processors to databases will benefit greatly from the large – 720K formatted – storage capacity of the second drive. Owners of the PCW8256 who wish to upgrade their computers may either choose the official Amstrad disc conversion available via recognised PCW dealers or may choose from an increasing number of third-party kits.

The official conversion is more expensive than most DIY upgrades and, in general, will mean that the computer will have to be left with the dealer for anything up to a week while the modification is undertaken. For many owners, the prospect of being deprived of their computers for that period will be unacceptable. The major advantage of using a dealer to undertake the upgrade is that any warranty still in force on the hardware will be honoured by the dealer; that is not the case if the owner undertakes his own conversion.

First step

Your Computer chose the Citadel Products CP512 upgrade kit which consists of both the second drive and a set of eight RAM chips to bring the RAM disc of the computer up to a 368K specification. The fact that the instructions supplied with the kit can be described as comprehensive yet occupy only two sides of an A4 sheet of paper indicate that the installation of the second drive is a straightforward process which will take most users less than 15 minutes to complete.

The first step is to remove the back cover of the computer by unscrewing the six screws holding it in position, having first unplugged it from the mains supply. Next, the blanking plate mounted beneath the existing drive should be prised away carefully from the casing of the machine. That is best accomplished with the aid of a narrow-bladed screwdriver.

A thin hacksaw must then be used to remove the six plastic tabs which hold a second blanking plate in position. Extreme care should be exercised during that operation to ensure that the wiring behind the plate is not damaged by the blade of the saw. When the six tabs have been severed, the plate may be removed and a small file used to tidy any jagged edges in the newly-formed opening.

The disc drive may then be fitted using the three self-tapping screws supplied as part of the CP512 kit. When mounting the drive take care that it is orientated correctly; the disc eject button should be to the right of the computer when viewed from the front of the machine.

The final stage in the upgrade is to connect the two multi-way connectors to the drive. Again, take care that they are orientated correctly, using the connectors already fitted to drive A as a guide. The upgrade is then complete; all that remains to be done is to verify correct operation of the drive.

To test operation of the second drive, first load the CP/M operating system software from drive A. The sign-on message should indicate the presence of the second drive. If that is not the case, switch off the computer and check that the two multi-way connectors are wired correctly to the drive.

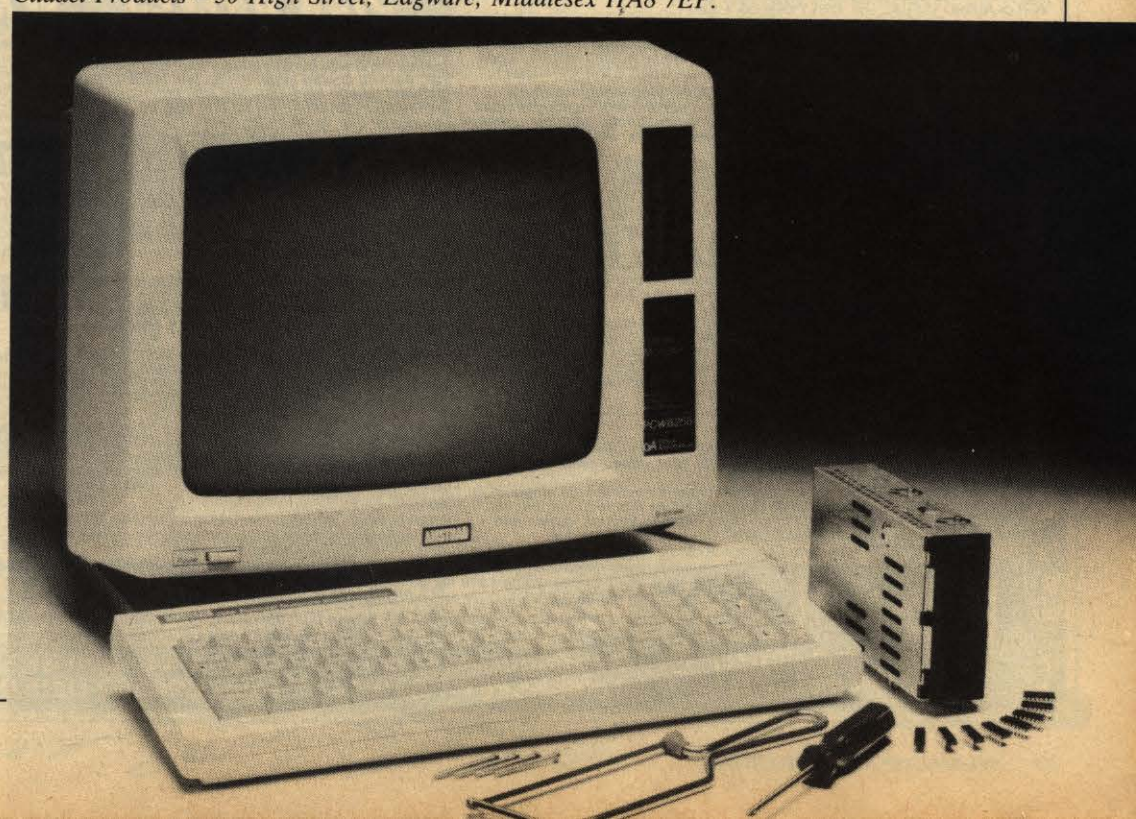
Finally, the CP/M DISCKIT command should be used to format a disc in drive B. Note that the system will detect the presence of the second drive and modify the DISCKIT menus accordingly. Having selected the format option from the commands mains screen, the user will be given the option of formatting a disc in drive A – pressing function key f3 – or of formatting a double-density disc in drive B – pressing function key f1. Choose the latter option and, if the drive is functioning correctly, the on-screen display should indicate that the disc is formatted with 160 tracks.

Upgrade

While upgrading a PCW8256 to the full specification of the 8512 machine costs considerably more than the difference in the retail price between the two machines, there will be many 8256 owners for whom the upgrade option will be cheaper than selling their machines, at a considerable loss, and buying a new 8512 model.

For all but the least demanding of applications, of which it could be argued using the computer exclusively as a word processor in conjunction with Locoscript is one, the extra facilities of the twin-drive computer will add greatly to the ease of use of the system.

Citadel Products – 50 High Street, Edgware, Middlesex HA8 7EP.



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Mike James looks at property lists in artificial intelligence.

Using the turtle as a strategic alternative

Logo was intended originally as a teaching language – and so was the most popular of all computing languages, Basic. There are a number of important differences between the two which stem from the philosophies of their creators and the era in which they were created. Basic was designed to be a simple and quick introduction to programming for students of engineering, mathematics, physics, biology and so on. As a result, it was modelled on the most-used scientific language at that time, Fortran.

Logo, on the other hand, was intended to be an introduction to computer thinking so, rather than being a simple tool for doing the calculations of some other discipline, it was designed as a language to bring people closer to the way computers work and vice versa. Some advocates of Logo hold very radical views, not only on how computing should be taught but on how computers should be used.

All computer users taught a traditional language such as Basic, Fortran or Pascal think in terms of solving problems by writing programs but in Logo there is the alternative strategy of creating environments in which a problem can be solved. An environment is a collection of procedure definitions, any one of which can be used by typing its name. There is no main program in the usual sense and therefore the user still has a good deal of work to do to solve any given problem. It is argued that programs are too restrictive and environments encourage creativity in problem-solving but that is still controversial.

Given that Logo is intended as a language in which the most general types of problems can be tackled, it is not surprising that it borrows many ideas from languages used in artificial intelligence research, in particular Lisp. You could say that Basic is to Fortran as Logo is to Lisp but that would be a gross over-simplification, in that the gap between Logo and Lisp is a big one.

Someone who knows Logo, however, will find Lisp relatively easy to learn. The most obvious features Logo borrows from Lisp are its use of lists and recursion but there are others. In particular, Dr Logo and many other versions of Logo support property lists, which is usually considered to be an advanced feature of Lisp. Property lists are used in the construction of artificial intelligence programs and as a result they are often thought to be a difficult topic but they are very simple and very convenient. In this article the way property lists work is explained and, by way of example, a Logo database program is described.

It may seem insultingly simple to say that a property list is a list of properties but once a definition of what constitutes a property is given, that is all there is to it. A property is a pair of items; the first is the name of the property and the second is its value. For example:

```
telenum 1234
```

is a property, its property name is telenum and its value is 1234. Another more descriptive name for a property is a property pair. Every Logo name has associated with it a property list. That includes names used for procedures and names used for variables. Normally such property lists are used automatically to store information as special system properties. The value of a standard variable is stored as a property pair .APV *value*, the property name .APV stands for Associated Property Value. You can examine the property list of any variable using the plist command:

```
plist name
```

will output the property list belonging to *name*. If you store a value in a variable:

```
make "test 100
```

and then examine its property list:

```
show plist "test
```

you will see

```
[.APV 100]
```

showing that the value of the variable is stored as a property. What is more surprising is that the statements which make up a procedure are also stored as a system property.DEF. If you define a procedure:

```
to "temp
  make "b 200
  pr "b
end
```

and then examine its property list

```
show plist "temp
```

you will see

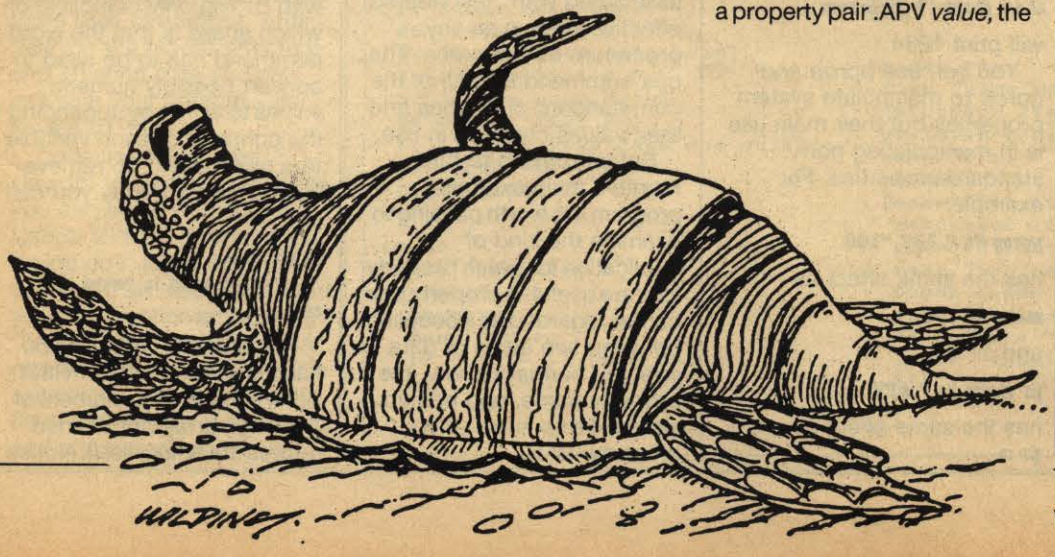
```
[.DEF [[] [make "b 200] [pr "b]]
```

which looks complicated until you realise that the property name is .DEF and its value is the single list:

```
[[] [make "b 200] [pr "b]]
```

and the items in the list are themselves lists. The first list contains the names of any parameters used in the procedure definition – in this case an empty list because no parameters were used – and

Continued on page 34



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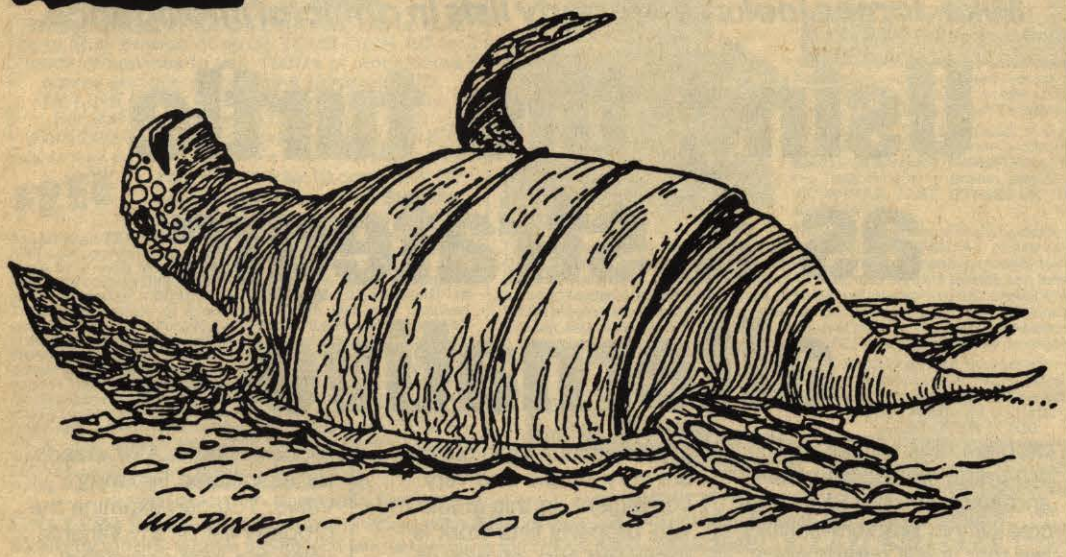

the remaining lists are the statements which make up the procedure.

A name is a variable if its property list contains an .APV property and a procedure if it contains a .DEF property. A property list can contain any number of property pairs and that allows a name to be both a variable and a procedure at the same time. For example, if you store a value in a variable:

```
make "a 100
```

and then define a procedure of the same name

```
to "a
  pr "hello
end
```

its property list will contain both .APV and .DEF properties:

```
show plist "a
[.DEF [[] [pr "hello]] .APV 100]
```

That never confuses the system, because whenever you use the name as a procedure it looks for the .DEF property and when you use it as a variable it looks for the .APV property.

So far, property lists have seemed more to do with the way Logo works internally than something which can be applied within a program. The key to making use of property lists in applications is that you can create and use your own properties, so-called non-standard properties. To do that you need two commands pprop – put property – and gprop – get property. The pprop command can be used to store a property pair in the property list of any name:

```
pprop "name "property "value
```

For example,

```
pprop "b "telnum "1234
```

stores the property pair telnum 1234 into the property list associated with b. Following this

```
show plist "b
```

produces

```
[telenum 1234]
```

You can find the value associated with any property using the gprop command:

```
gprop "name "property
```

which returns the value of *property* in the property list associated with *name*. For example:

```
show gprop "b "telenum
```

will print 1234.

You can use pprop and gprop to manipulate system properties but their main use is in manipulating non-standard properties. For example:

```
pprop "a ".APV "100
```

has the same effect as

```
make "a 100
```

and

```
pr gprop "a ".APV
```

has the same effect as

```
pr :a
```

Three other commands can be used to manipulate property lists – glist (get list), remprop (remove property) and pps (print non-standard property pairs). Note that pps is not available in version 1 of Dr Logo. The

```
glist property
```

command returns a list of all the names which have a given property defined in their property list. For example:

```
show glist ".DEF
```

will print a list of all the procedure names in use. The

```
remprop name property
```

command removes the specified property from the property list associated with *name*. For example,

```
remprop "test ".DEF
```

removes the .DEF property from the property list associated with "test and so effectively removes any procedure of that name. The pps command lists all of the non-standard properties and their values currently in use.

Before moving to this month's main example program it is worth pausing to examine the kind of application for which property lists are useful. A property pair can be regarded as a coupling between two items of data – one you normally know, the property name, and one you would like to know, the property value.

Consider a simple list of telephone numbers constructed so that each person's telephone number was stored as a property pair telenum *value* in a variable called after their surname. That is the property list of the variable called smith. It would contain [telenum 123456] if 123456 was smith's telephone number. Using this system you can find anyone's telephone number by

```
show gprop "name "telenum
```

where *name* is replaced by the person's surname. In that case for each person "telenum is the part of the property pair we know and the telephone number is the item of data we want.

A similar situation arises in the use of the Basic array. If you know the index value I you can find the corresponding data value by referring to that element, e.g.,A(I) if the array is called A. That pairing of index value and data value is exactly like the pairing of the name and value of a property pair. You can use that similarity to create property lists which behave like arrays. The following procedure will store a value v in "element" i of the "array" called a:

```
to store :a :i :v
  pprop word :a " word :i "word
    :v "
end
```

That is, **store "b 50 4534** produces the same effect as **b(50)=4534** in Basic. What happens is that the value 4534 is associated with the non-standard property 50 in the property list associated with b. The only complication which arises is that the word command has to be used to convert possibly numeric values to words by appending the contents of each variable to a null word ". To retrieve values from an array you can use:

```
to ret :a :i
  op gprop word :a "word :i "
end
```

For example, pr ret "b 50 has the same effect as PRINT B(50) in Basic. Any element of the Logo array not defined returns the empty list []. Notice

that this Logo version of the array is more powerful than the Basic version in that it can store any type of data – numeric, words, lists – and you do not have to state the maximum index you intend to use beforehand.

In last month's QuickSort program one problem encountered was how to swap two items in a list efficiently. If the list is constructed as a Logo array it is a matter of using store and ret in roughly the same way you would swap values in a Basic array.

The example program this month is so big that it has to be used in two parts. Newdbf is a short program which can be used to create a database and usedbf is the main database program which can be used to look up items and examine, add and amend records.

To use the database, first type-in and save both programs. Then load Newdbf and type db. That will print a menu on the screen and initially you should select the "create a database" option. That permits you to define a number of fields to make up a record.

If you wanted a simple name and address database you could define four fields – Name, add1, add2 and add3. After defining the record structure you can then enter any amount of data, up to the limit of available memory, in the form of individual records. In the case of the name and address database you could enter a number of records, each consisting of a name and three lines of address. After defining the record structure and entering data you can examine your database or save it to disc.

Once you have used Newdbf to create a database you can erase Newdb, load Usedb and get it running by typing db1. From the menu you can then select the "load your data" option and use the "find a record" to search for a record with a particular value associated with any given field. In the case of the name and address database you could search for a record corresponding to a particular name. You can also use the program to view all of the records in the database, change a record and modify records.

As you might expect, property lists are the basis of this database program but there are a number of other interesting techniques. A separate variable is used to store each record in such a way that rec1 stores record number 1, rec2 stores record number 2 and so on. Those variable names are constructed for each record by using the word command. In procedure see_db the record name is stored in the variable name by

make "name word "rec :c

where c contains the number of the record required. Within each variable the record is stored in its associated property list. Each field name corresponds to a property name and the value stored in the field is the property value. Finding a record with a particular value is a matter of examining the property list of each variable in turn, using gprop to extract the value associated with the specified field.

If you study the program carefully you should be able to see how useful property lists are and discover a number of other useful techniques. If you look at the save procedure you will see that it works by deleting all the unnecessary procedures and then saving the program. In Logo you cannot save variable values explicitly but they are saved whenever you save a program.

In the same way loading a program loads all the variables exactly as they were when the program was saved.

Continued on page 36

Newdb

```
to save_db
 er "pr_menu
 er "new_db
 er "get_struct
 er "get_rec
 er "see_db
 ct
 setcursor list 1 3
 pr [what do you want to
    call your database]
 make "file_name rq
 save :file_name
 make "ch 4
end
to get_struct
 make "fields []
 ct
 setcursor list 0 3
 pr [how many fields]
 make "num rq
 make "c 1
 repeat :num
 [make "y (+ 3 (* :c 4))
  setcursor list 0 :y
  pr [field name ?]
  make "inp rl
  make "fields (se :fields :inp)
  make "c :c + 1
 ]
end

to pr_menu
 ct
 setcursor list 0 3
 pr [logo data base]
 setcursor list 0 5
 pr [1 create a data base]
 setcursor list 0 7
 pr [2 see your data]
 setcursor list 0 9
 pr [3 save your data and quit]
 setcursor list 0 11
 pr [4 quit]
end

to db
 make "end_flag 0
 label "loop
  pr_menu
  make "ch rq
  if (:ch = 1) [new_db] []
  if (:ch = 2) [see_db] []
  if (:ch = 3) [save_db] []
  if (:ch = 4) [go "loop_end] []
  go "loop
  label "loop_end
 end

 to new_db
  get_struct
  make "i 1
  label "read_loop
   ct
   get_rec
  if (:end_flag = 1) [go "end_r_lp] []
   make "i :i + 1
  go "read_loop
  label "end_r_lp
  make "i :i - 1
 end

 to see_db
  make "c 1
  repeat :i
  [ct
   make "name word "rec :c
   make "s_fld 1
   repeat :num
   [setcursor list 0 :s_fld * 4
    pr item :s_fld :fields
    setcursor list 0 :s_fld * 4 + 2
    pr gprop :name item :s_fld :fields
    make "s_fld :s_fld + 1
   ]
   make "c :c + 1
   setcursor list 0 :s_fld * 4
   pr [press any key to continue]
   make "cont rc
  ]
 end

 to get_rec
  make "name word "rec :i
  setcursor list 0 0
  pr [type finished to stop data entry]
  make "c 1
  repeat :num
  [make "bit item :c :fields
   setcursor list 0 :c * 2
   pr word :bit "?
   make "inp rq
   pprop :name :bit :inp
   make "c :c + 1
   if (:inp = "finished)
   [make "end_flag 1]
   []
  ]
 end
```

DR LOGO

Continued from page 35

The only problem with this database program is that Dr Logo is very heavy on memory usage and you will not be able to store many records before running out of memory. The program will work, in principle, on Dr Logo version 1 if you delete all the uses of the setcursor command but on the CPC664 and CPC464 there is so little memory that you will also have to delete most of the menu options to make the program fit. That is not really a limitation of Logo as a language – more a failing of the implementation.

• *Next month: The final part, more on lists and errors.*

Usedb

```
to pr_menu
 ct
 recycle
 setcursor list 0 3
 pr [logo data base]
 setcursor list 0 5
 pr [1 see your data]
 setcursor list 0 7
 pr [2 find a record]
 setcursor list 0 9
 pr [3 save your data]
 setcursor list 0 11
 pr [4 load your data]
 setcursor list 0 13
 pr [5 change a record]
 setcursor list 0 15
 pr [6 add a record]
 setcursor list 0 17
 pr [7 quit]
end

to db1
 make "end_flag 0
 label "loop
  pr_menu
  make "ch rq
  if (:ch = 1) [see_db] []
  if (:ch = 2) [find_rec] []
  if (:ch = 3) [usave_db] []
  if (:ch = 4) [load_db] []
  if (:ch = 5) [change_rec] []
  if (:ch = 6) [add_rec] []
  if (:ch = 7) [go "loop_end] []
 go "loop
 label "loop_end
end

to usave_db
 ct
 er "see_db
 er "load_db
 er "change_rec
 er "add_rec
 er "find_rec
 er "present
 er "not_present
 er "pr_struct
 setcursor list 1 3
 pr [what do you want to call
     your database]
 make "file_name rq
 save :file_name
 make "ch 7
end

to see_db
 make "c 1
 repeat :i
 [ct
  make "name word "rec :c
  make "s_fld 1
  repeat :num
  [setcursor list 0 :s_fld * 4
   pr item :s_fld :fields
   setcursor list 0 :s_fld * 4
    + 2
   pr gprop :name item :s_fld
   :fields
   make "s_fld :s_fld + 1
  ]
  make "c :c + 1
  setcursor list 0 :s_fld * 4
  pr [press any key to continue]
  make "cont rc
 ]
end

to find_rec
 ct
 pr_struct
 setcursor list 0 14
 pr se [what value has] item
  :wh_fld :fields
 make "rec_num 0
 make "fnd 0
 make "wh_val rq
 make "c 1
 repeat :i
 [make "name word "rec :c
  make "cur_val gprop :name item
  :wh_fld :fields
  if (:wh_val = :cur_val)
  [make "rec_num se :rec_num :c
   make "fnd :fnd + 1
  ]
  []
  make "c :c + 1
 ]
 setcursor list 0 6
 if (:rec_num = 0)
 [not_present]
 [present]
end

to load_db
 ct
 setcursor list 1 3
 pr [what is the name of your
     data base]
 make "file_name rq
 load :file_name
 recycle
end

to change_rec
 ct
 setcursor list 0 0
 pr [what is the record number
     you wish change]
 make "rec_num rq
 make "name word "rec :rec_num
 make "c 1
 repeat :num
 [setcursor list 0 :c * 6
  pr item :c :fields
  setcursor list 0 :c * 6 + 2
  pr gprop :name item :c :fields
  pr [what is the new value - zzz
     to keep the current value]
  make "inp rq
  if not (:inp = "zzz)
  [pprop :name item :c :fields:inp]
  []
  make "c :c + 1
 ]
end

to present
 make "d 1
 make "rec_num bf :rec_num
 repeat :fnd
 [ct
  setcursor list 0 0
  pr se [found at record number]
  item :d :rec_num
  make "c 1
  repeat :num
  [setcursor list 0 :c * 4
   pr item :c :fields
   setcursor list 0 :c * 4 + 2
   make "name word "rec item
   :d :rec_num
   pr gprop :name item :c :fields
   make "c :c + 1
  ]
  setcursor list 0 :c * 4
  pr [press any key to continue]
  make "cont rc
  make "d :d + 1
 ]
end

to not_present
 ct
 setcursor list 0 2
 pr [there is no record with]
 pr item :wh_fld :fields
 pr [being equal to]
 pr :wh_val
 setcursor list 0 7
 pr [press any key to continue]
 make "cont rc
end

to pr_struct
 make "c 1
 repeat :num
 [setcursor list 0 :c * 2
  make "pr_def se :c item:c:fields
  pr :pr_def
  make "c :c + 1
 ]
 setcursor list 0 :c * 2
 pr [enter the number of the
     field you]
 pr [wish to search on]
 make "wh_fld rq
end

to add_rec
 ct
 make "i :i + 1
 make "name word "rec :i
 make "c 1
 repeat :num
 [make "bit item :c :fields
  setcursor list 0 :c * 2
  pr word :bit "?
  make "inp rq
  pprop :name :bit :inp
  make "c :c + 1
 ]
end
```

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EMR take Midi very seriously, as their latest package for the BBC shows. Ian Waugh takes an in-depth look.

BBC Electro Music System

EMR was the first company to produce a Midi software package for the BBC computer. That was more than a year ago and since then EMR has taken the Midi concept to heart, producing more than 15 software packages for various computers, with more on the way.

There are already many Midi packages for the Commodore 64 but as well as adding its own, EMR has interfaces for the Spectrum, Apple, MSX, Research Machines Link 480-Z, Amstrad and BBC computers. It also produces a Midilink unit with a Midi IN and six Midi Thru sockets. Older rhythm units and sequencers with sync out can be plugged into the interfaces to control the computer and Midi instruments and an inexpensive sync-to-tape option is available which provides a click track for multi-track recording.

To sample the software, I looked at four of the BBC packages – the Performer, the Composer, the Music Editor and Vu-Music. EMR groups them all under the generic title of Miditrack and their most striking feature is the amount of control the user has over the whole recording process.

Two ways

To run any of the programs a Midi interface is required, plus at least one Midi-equipped keyboard. The EMR interface includes a Midi IN, two Midi OUTs and a clock start/stop socket. Two cables plug into the BBC user port and 1MHz bus and two LEDs show when signals are being sent and received.

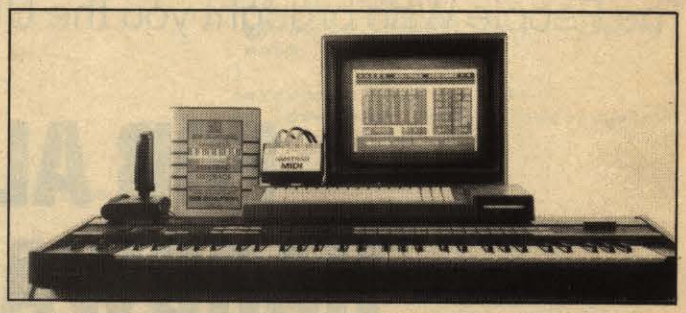
There are two ways of putting information into a Midi system, real-time and step-time, and the Performer deals with real-time note entry. Two demonstration programs are provided with the disc, an excerpt from the fourth movement of Beethoven's Sonata in C minor and a selection of jazzed-up Christmas carols. Both are excellent examples of what can be done with the program. You can record on up to eight tracks, each of which has the settings for Play, Channel, Pitch, Loop, Control and Mode. Play turns a track on or off. Channel is used to select the channel number from 1 to 16 on which the track will be transmitted.

Pitch will transpose a track up or down up to 12 semitones. Loop causes a track to repeat continually. Control is a memory-saving option which can filter-out Midi control features such as velocity or pressure sensitivity which consume a good deal of memory. Mode selects polyphonic or mono mode.

Most keyboards are polyphonic and that is the mode you will use normally.

The mono setting can be used with multi-timbral instruments such as the Casio CZ series, although they can also be played in polyphonic mode.

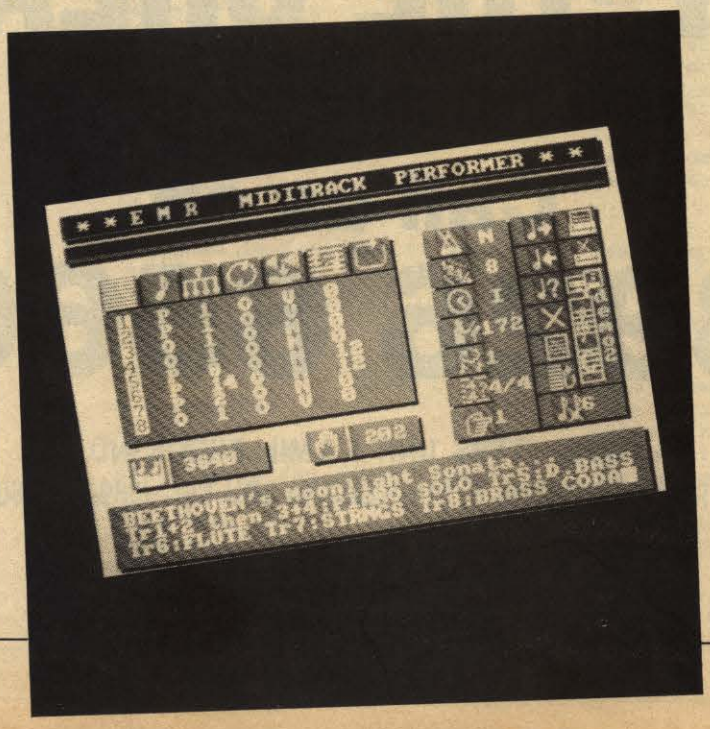
Apart from the foregoing, which all Midi packages do not have, there are other features. You can enter a time signature and adjust the tempo. A metronome beat can be switched on or off, a lead-in count of from 0 to 8 can be set and the start bar – the bar at which playback starts – is stipulated, too. The text option allows you to store brief details of the piece.

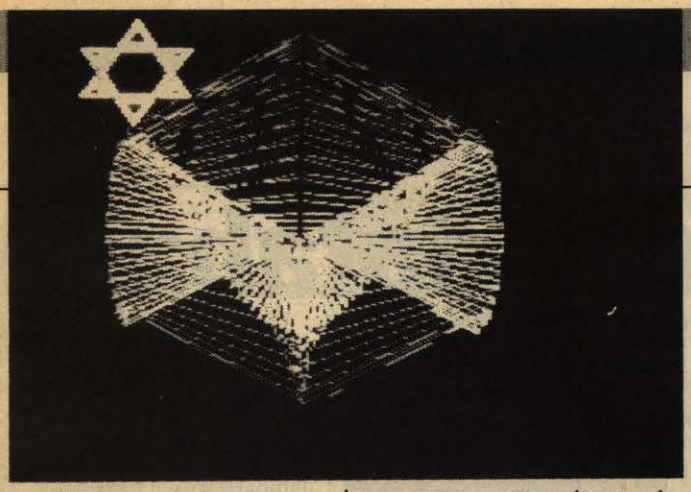


Special features include a punch-in facility but, alas, no punch-out. Arrange allows you to construct up to 64 arrangements of the recorded tracks, which can increase the playback time of your recording. An auto note correct feature will correct your timing if it is out a little. The sensitivity can be adjusted from 32nd notes up to quarter notes. By connecting the Midi OUT to the Midi IN socket you can merge tracks, too.

All in all, the Performer software offers probably more features than you would need or expect in a real-time package. In practice, it worked reasonably smoothly but I managed to crash it twice during various operations. Also, I must confess, it needed a good deal of experimentation to make use of the multi-timbral option on a CZ-1000, due possibly to the way Midi is implemented. A multi-timbral instrument can play a number of monophonic lines – four in the case of the CZ-1000 and CZ-101 – each with a different voice. Such instruments make the most of Midi as they provide a ready-made four-track digital recorder.

The metronome sounds a brief pitch on any instrument set to channel 1 which confused the Casio when in its mono (multi-timbral) mode. A click from the BBC sound chip, or at least that option, would have been helpful. It is





a credit to the design that so many features have been incorporated on one menu page but two additions would have been useful, such as being able to select the drive. There are no editing options, other than punch-in, but the EMR Editor program can help there.

For those of average digital dexterity, step-time note entry may be preferable to real-time. The Composer allows you to do that with a storage capacity of 5,100 Midi events over six tracks. It is controlled from a menu page offering nine options – Catalogue, Load Music, Save Music, Create Miditrack which is basically a system re-set, Miditrack Composer, Memory Free, Select Play Tracks which turns tracks on and off during playback, Miditrack Notator and Midi Configuration.

The Notator is a separate program retailing at £34.95 which prints-out a track from the Composer in traditional music notation. Midi Configuration allows you to allocate channel numbers to the tracks and set the mode to polyphonic or mono. That option is also used to select the internal clock or an external source such as a rhythm unit.

Composer option

That leaves the Miditrack Composer option which is where the work is done. There are commands to insert notes and rests – notes can be inserted from the computer or an instrument keyboard – change voice and add modulation control. Dynamics can be allocated to each note, ranging from ppp to fff, as can style, which comprises ties, staccato, legato and pulse – half on, half off. A handy function key strip simplifies note entry.

A copy facility permits you to copy events to other tracks or to the same track with optional transposition. Notes and modulation information can be inserted into your arrangement and deleted very simply. As well as working perfectly with normal polyphonic instruments, it handled the CZ-1000 multi-timbral (mon) mode like a dream.

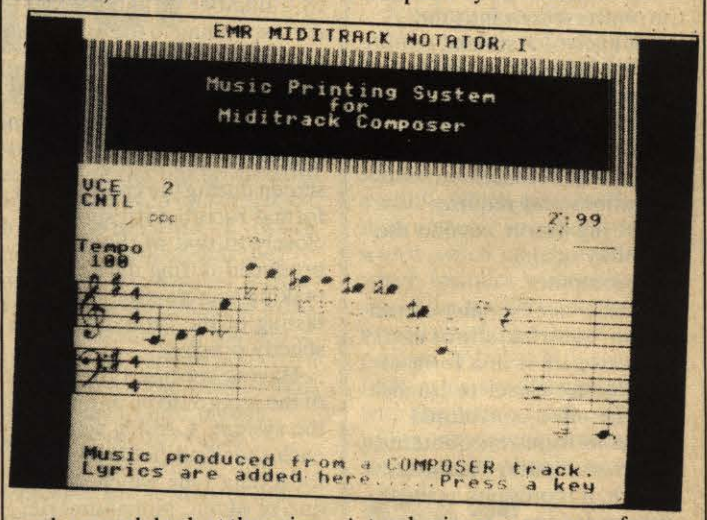
The Music Editor brings together the Performer and Composer packages. It can convert step-time Composer tracks into real-time Performer tracks. Each assigned track can be put on one or more spare tracks, either of an existing Performer file or a new one.

Full editing of a polyphonic track from a Performer file is possible from the Editor. Every Midi event is displayed, including performance controls, in the order in which they are sent. Events can be inserted by copying an existing event at the required place and then altering it. That seemingly round-the-houses approach ensures that the original timing is maintained and gives extra control over an already flexible editing system.

In addition, Performer files can be linked for continuous playback and the linker program checks automatically that each file will fit into memory. Overall memory has been increased over the original Performer program by up to 50 percent. An extra program, Music Player, is included on the disc which just loads and plays Performer files. Having recorded all your tunes you can store them on one disc and use Music Player to play them.

The facilities of the Editor program take us into the murky world of Midi codes. Sample files are included on the disc and examples are given in the manual, so you can follow the process.

The Music Editor complements the Performer very well, although some may argue that such editing facilities should be included in the Performer program. The counter-argument is two-fold; first, many people will not require the extra editing facilities, at least not at first and, second, look at the price.



The fourth program is Vu-Music. It produces a graphic display which varies according to the notes played and performance controls used. Input is required from a Midi keyboard and changes occur as you play. Different displays are suggested from the menu screen – Classical, Pop, Jazz and Rock. It is not possible to play a pre-recorded Composer or Performer file through Vu-Music, which is a pity, and misses, surely, an opportunity to integrate all the packages but the displays are fun to watch and produce. EMR offers customised Vu-Music displays, too, which may interest performers.

Although the software can be used, and is, by professionals and musicians with multi-keyboard set-ups, many people will see multi-timbral instruments such as the Casio CZ series as an ideal and inexpensive way into Midi – a simple way to create multi-track pieces – so ease of use with such instruments could be important.

The packages go much further than the facilities offered on the CZ synthesisers, however, and as you expand your set-up to include the Yamaha DZ range, Midi effects units, sequencers and drum machines, the Miditrack range should keep pace with new additions. They are also priced very competitively and you get plenty of features for your money. Whatever your computer, look closely at the EMR Midi range.

DATA

Computer	**BBC**
EMR Interface	1 x Midi IN, 2 x Midi OUT, clock start/stop.
Performer	8-track polyphonic real-time recorder.
Composer	Dynamic memory six-track step-time recorder.
Editor	Step-time editing for Performer files.
Vu-Music	Graphic display from real-time Midi input.
Prices	EMR interface £79.90. Miditrack Performer £49.95. Miditrack Composer £44.95. Miditrack Editor £39.95. Miditrack Vu-Music £24.95.
Supplier	Electromusic Research, 14 Mount Close, Wickford, Essex SS11 8HG. Tel: 0702 335747 and 03744 67221.

Condor 1 database

Condor 1 combines a database manager and report generator. Michael Graham reports.

It could be argued that the ideal database would allow users to extract information on a wide range of subjects, the information being output in a form specified as part of the user's question, and that all interaction between the user and the database would be in the native tongue of the questioner – that is in English rather than computer-speak. Current research into the techniques of Artificial Intelligence is bringing nearer the day when all databases will conform to that ideal but for the present such systems are confined to research institutions and require processing power beyond the capability of the microcomputer.

The *Condor 1* database from Caxton, however, allows users to interrogate it in a form of language far closer to English than the often convoluted command forms encountered in microcomputer databases. As such, it represents an ideal package for the type of users who want to discover how many widgets they have in stock, without having to spend an entire morning determining how to extract the information from their newly-created database.

Start of day

The PCW version of Condor is supplied with installation instructions for the various hardware configurations of the computer – PCW256 with either one or two drives and the twin-drive 512 version of the machine with 512K RAM. The inclusion of three submit files on the system disc aids the creation of a start-of-day disc for the particular version of the computer in use. The database exploits the PCW RAM disc by transferring its command files to that disc, leaving the physical drives free to store the data files.

In common with other databases, the first task to be undertaken when using Condor is the creation of a record specification file. That is accomplished with the <create> command. Following that command, the screen will clear to display a blank record form, together with a status line running along the lower edge of the screen. The format of the database is configured by entering the field names required, enclosed in square brackets, followed by a number of underscores corresponding to the maximum number of characters which will be input under each field name.

Unlike some other databases, the format of the screen during the creation of a format record corresponds closely to that of the display produced during data entry, making the creation and testing of the format screen a speedy process.

Having specified the format of the records to be entered to the system, Condor will, for each specified field, prompt for a data type which may be one of alpha, alphanumeric, numeric, money or date. At any point in the creation of the master record, the user is given the option of revising any part of the specification.

When satisfied with the form of the definition file, data may be entered to the system by using the <enter> command. That will display a blank form into which the user may key data. Having entered data into the first form, the user may either go back and revise any of the details, move to the next blank record or leave the system. To aid revision, the entry mode screen allows users to select between a number of modes, including an insert or over-write option.

The real power of Condor becomes apparent when processing the data in the system. Assume that the database, named Library, was being used to contain details of a library of books and that a field named title contained the title of each book and another called publisher recorded details of the publisher of each title. To produce a sorted file containing an alphabetic list of each book published by every publisher, the following command would be used:

SORT LIBRARY BY PUBLISHER TITLE

That would first sort the database by publisher and then, within each set of titles produced by a publisher, would further sort the titles into an alphabetic sequence. The form of the command follows closely that of an English sentence, making it easy to remember. The form of command just shown extends to many operations; thus to find a specific record for update, the command:

UPDATE LIBRARY WHERE TITLE IS "YOUR COMPUTER"

could be used. That command would select the record with the words Your Computer in the title field.

Condor allows data stored in the database up to 32 sort criteria to be specified for any operation, storing results either in sub-sets of the main database or producing them as printed records. The format of any printed material can be specified by the user as part of the <title> command.

The comprehensive more than 300-page manual supplied with Condor introduces some sophisticated data management techniques which encourage a professional approach to the creation and maintenance of databases. One is the rule that a master database should never be updated directly but by way of an update record. In that way the integrity of the master database will be maintained in the event of any errors being introduced during the update process.

Using a text editor, such as *New Word* in its non-document mode, it is possible to build a command file which will undertake a series of specified operations on the records in a database without the intervention of the user.

The help command allows users to define their own help screens to be called-up while the system is in use. A help screen is defined with the format command and takes the form of a text prompt, followed by a Condor command string. When such a help screen is called-up during operation of the program, each action as outlined by the prompt may be called by a single keypress. The command executed may either be another help file or a command file as outlined. That is a valuable facility for those configuring a database for use by others.

The Condor database is an ideal choice for applications requiring sophisticated reports to be produced from the information contained in the database. For applications which require that specific records can be isolated and displayed on-screen there are other databases better-suited to the task, of which the Caxton *Cardbox* is one.

Caxton is confident that all the products in its range are easy to use and support that confidence by offering free advice to any user in difficulty. Having used Condor to set up and process a number of differing databases, I feel the confidence is justified.

At a glance

Maximum database size:
65,345 records.
Maximum record size:
1,024 bytes.
Maximum fields per record:
127.
Maximum characters in alpha field:
127.
Valid data types:
Alpha, alphanumeric, numeric, money, date.

Prospell from Arnor is a comprehensive spell-check program which will help eliminate any spooling errors from your Locoscript documents.

Locoscript chequer

As a word processor, Locoscript can justly claim to be a comprehensive product supporting a wide range of facilities associated with the production of printed documents with a professional look. When it comes to some of the other facilities associated with a modern word processor, however, Locoscript has some obvious omissions. There is no mailmerge facility to aid the production of personalised mail shots and neither is there a built-in spell-check program. It is the latter facility the Arnor Prospell provides.

In keeping with the Amstrad philosophy of designing fully-integrated products, the Locoscript software is a self-contained suite of interlinked programs which, while making the word processor easy to use, provides a stumbling-block for any third-party software publisher wishing to build additional function into the program.

Stand-alone

While it would be possible to integrate a spell-check option into Locoscript, via say the f7 options selection from the disc manager screen, the technical details of how that could be accomplished have not been made available. Such a facility may be provided by Amstrad at some time but for the present Arnor has a stand-alone spell-check program compatible with Locoscript. The program is described as stand-alone because to use the spell-check option it is necessary to quit Locoscript and re-boot the computer for operation under CP/M.

Producing a Prospell start-of-day disc is a two-stage process. First, the Prospell command file, PS.COM, must be transferred to one side of a blank disc along with the CP/M .EMS file from side two of the set of PCW system discs with the PIP command. Next, dictionary file must be copied to the other side of the disc. Because of its special format it cannot be copied using PIP command but must be copied from within Prospell, using one of the options from the main menu.

Prospell is compatible with all versions of the PCW computer but is more convenient to use when two drives are fitted. We tested Prospell using an upgraded PCW8256. In operation, the computer is booted with the Prospell start-of-day disc in drive A and the Locoscript disc containing the document to be checked in drive B. When CP/M has loaded, the spell-check program is called with the command PS. At that point the disc in drive A can be turned over so that the dictionary is available to the system.

Single pass

The main Prospell menu permits the user to select between a number of options, of which the S and T options are those associated most closely with the spell-check operation. The S command starts a single-pass spell-check, while T initiates a two-pass spell-check. The difference between the operations is that a single-pass check will cause the system to halt at each word not in the dictionary and prompt the user for an action, while the two-pass check will compile a list of all such words, displaying them on-screen before displaying them one at a time for the user to take the appropriate action. The latter mode of operation is more convenient when checking long documents.

When the program has halted at a word it cannot identify, the user may take one of the following actions. The most likely of them will be to correct the word with the C option. Before selecting that option, though, the user may choose either to view the word in context – V – when the section of the document containing the unknown word will be displayed on-screen, or to look-up the word – L – when the system will search the dictionary file for any words resembling the unknown word.

When correcting the word, the original version is displayed for the user to edit. A number of edit modes, including the option to alternate two letters, are available to the user in edit mode. Other options available at the spell-check stage include S – store the word in a user dictionary; and I – ignore the word.

When the spell-check is complete, the user is prompted to place the Locoscript disc in drive A, at which stage the corrected document will be written to that disc. The system will retain the original version of the file, giving it the extension .BAK.

The main menu screen also has a number of additional commands associated with the system. Typing C will produce a catalogue of all text files on disc. Note that the catalogue will list only those files in the currently-selected Locoscript group. The group may be selected by means of another main menu command – G. It is also possible to produce printed reports of the spell-check process, the printer being switched-on by the command P.

A comprehensive set of utilities associated with the dictionary, all selected by the U option from the main menu, allow users to configure special dictionaries to suit their requirements. Also included is a utility which can search the dictionary for specific words or words which match a string which includes wildcards. For searching the dictionary for words which match the pattern, YO?? will list all four-letter words beginning with the letters yo. Another utility can search the dictionary for anagrams of an input word.

Serious user

Prospell is a fast and efficient spell-check program which will appeal to any serious user of Locoscript. It is easy to use and, while the dictionary is not so comprehensive as those found in some other word processors, the ability to build user-defined dictionaries means that is not a problem. The program is also able to check both ASCII and WordStar-compatible files, meaning that its usefulness will extend beyond Locoscript users.

The two-pass spell-check option lists all unrecognised words before prompting the user for an appropriate action for all such words.

```
PROSPELL v2.01   (c) Arnor 1986      Text: 08  Dictionary:
Options:  Store, Ignore, Change, Lookup, View   Document:

TWO PASS CHECK                    Dictionary name: ArnorDict01

Loading...
Scanning...
Sorting...
Checking...(Press STOP twice to stop)

AAPPROXIMATELY  ASERIES      AUDIO        CONFRIM
DISCCUSS        DISCKIT      DISPITE      DSIC
DSIPLAYED       ENETERED     ENETERING    ENNSURE
FOLLWED         FOLOWED      FORAMT       LOCOOSCRIPT
ORIGIANL        REFERNCE     SEPERATELY   SIDED
SIMAILAR        SWITHCHING   UNLIT

Another dictionary (y/n)? ▮
```

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GUIDE TO THIS MONTH'S REVIEWS

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Fingers Malone

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Bobby Bearing
Dynamite Dan II
Pyracurse
Conquest
Pud Pud

Software Shortlist

Each of the games reviewed in Software Shortlist has been reviewed extensively by our team of reviewers.
We do not include reviews of unfinished products in this section of *Your Computer;* they are the games you can buy now or in the near future.
See the Software News and Preview features for advance news of games being developed.

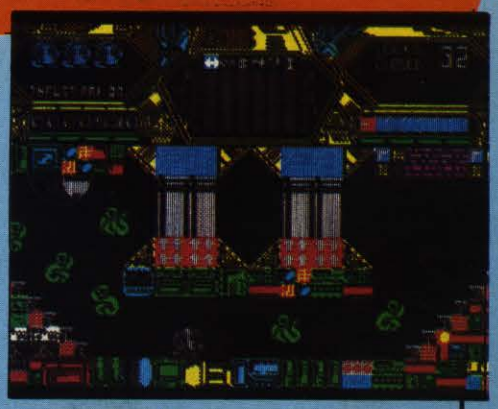
Soft Star

Watch for the *Your Computer* Soft Star. They are awarded to games which, in our opinion, offer outstanding value.

TANTALUS

► *Spectrum ● Quicksilva ● Arcade Adventure ● Lee Paddon ● £8.95*

GRAPHICS ●●●●
SOUND ●●
PLAYABILITY ●●●
VALUE FOR MONEY ●●●●
OVERALL ●●●



The Centuri Alliance has beaten the Jaglan group and they are banished from the universe. All except one. The last remnant of a once-great race must be assassinated. Ours not to reason why. Four spike punkoids have been sent to the fortress stronghold, which they must penetrate. Why it could not be done with much less fuss and a rather large thermonuclear device is not clear – probably trouble with the local environmentalists.

Penetrating the fortress involves locating 32 door-locks and de-activating them. That in turn opens previously-closed parts of the maze. So a map is a top priority and finding which locks operate which doors. The difficulty is the maze is 16 x 16 screens, each riddled with tunnels. As if all that were not sufficient many of the caverns are inhabited by varieties of nasties which attempt to nut you. There are also many passive obstacles which open and close; timing and patience is the key there.

To combat all that you have six weapon systems, so if you become fed up with the maze you can amuse yourself blasting wave after wave of remorseless aliens. At various points Spike must leave the ship and explore on foot, hopping and skipping.

The graphics are pleasant, the game play fast and addictive. Not a game to set the world on fire but it represents good value for the arcade adventure fan.

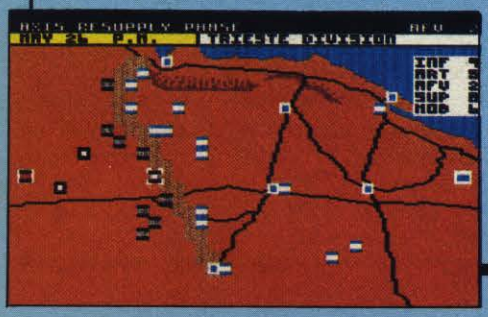
TOBRUK

► *Amstrad ● PSS ● Wargame ● Lee Paddon ● £9.95*

GRAPHICS ●●●●
SOUND ●●●
PLAYABILITY ●●●
VALUE FOR MONEY ●●●●
OVERALL ●●●●

A forerunner of such great British disasters as the World Cup and the West Indian cricket tour, the battle of Gazela, which this game re-enacts, demonstrates the total ineptitude of the high command in the Western Desert.

To simulate the paralysis at high levels, if you choose the two-player option and take the British, you will be faced with some nasty restrictions, sluggish armoured units and an immobile supply network.



Still, things are not all roses for the Germans. The Italians must be relied on to do much of the fighting and they have a nasty habit of surrendering when you least expect it. Thus the problems facing each player are well demonstrated. The Germans are effective but thin on the ground; the British are tied to their supply dumps and must counter German hit-and-run tactics. As with all PSS games, there are action screens, where you emerge from your safe hideout and get down among the shells and bullets. You control a tank, which you drive, find a target, and then shell or machine-gun it. The more targets you destroy, the more effective the attack.

As if that was not enough, the icing on the cake is the engineers and the air point allocation. Better still is the way the two-player game can be played with hidden movement. Two Amstrads are linked via the joystick port. Fog of war is a very important aspect in this campaign and that option will make *Tobruk* essential for Amstrad wargamers.

MANTRONIX

► *Spectrum ● Probe ● Shoot-'em-up ● Lee Paddon ● £7.95*

Zybor is a rather sparsely-populated planet and manifestly about the most boring place you could ever visit. The planet consists of a number of squares with things in the middle of them. Some of those things have to be picked up, others avoided.

It is difficult to become worked up about another isometric 3D game. What is more, it does not have any problems to be solved or objects to be manipulated or graphics to admire. On the plus side, it scrolls in all directions and you can even move diagonally. That is a heavy price to pay for very few special effects. It rather looks as if someone had just sorted out how to get a 3D effect and published the game without trying to put a plot around it.

GRAPHICS ●●●
SOUND ●
PLAYABILITY ●●●●
VALUE FOR MONEY ●●
OVERALL ●

The playing area is fairly vast and there are plenty of meanies – well, one at a time, but they are fairly mean, trying to get you. The meanies don't fire but they try to crash into you. There are even a few invisible barriers and the odd magnet pulling you to your doom but nothing too taxing.

With five lives, if you can tolerate the tedium, it should be fairly easy to complete the game, but who wants to? If you really love monocolour 3D minimalist graphics, you might get some form of pleasure from this; otherwise give it a miss.

MELTDOWN

► *CPC6128 ● Alligata ● Arcade/Adventure ● Francis Jago ● £8.95*

Timed to perfection to make the most of the recent Soviet accident at Chernobyl, *Meltdown* is the latest and greatest Alligata game for the Amstrad 6128. Ultimate fans will immediately feel at home with the style and quality of this arcade adventure.

Meltdown is Ross Goodley's first game for Alligata, and his graphics, together with the WE MUSIC soundtrack combine to make it compulsive and annoying. Amstrad 6128 owners will be impressed with both the quality of the backgrounds and the excellent animation which, unlike so many games, does not slow too dramatically.

GRAPHICS ●●●●
SOUND ●●●●
PLAYABILITY ●●●●
VALUE FOR MONEY ●●●●
OVERALL ●●●●●

Bail Bond, the hero of this little saga, has a tough job on his hands. Not only must he prevent the Star Wars HQ becoming unstable but there are many robots who would rather see him dead.

To achieve your goal you must travel round the three floors of the HQ, logging-on to various computers and eventually gaining six passwords from each level. Each of the terminals on to which you log has a sub-game built in and only when you have completed each of the sub-games successfully will you be granted the passwords.

Before you start playing, it is worth listening to the music, which although it does not play throughout the game, is truly outstanding – and stereo. Even if you manage to complete all three levels, something which will take even the most skilful player a long time, you must cope with a new and more difficult section. It involves writing a program in SCUBA – Simple Code Understandable By Anyone – to direct the remote manipulation vehicle round the fuel rods to avert a reactor meltdown.

Meltdown is an outstanding game which makes the most of all the capabilities of the Amstrad. Even the speech is excellent, if a little annoying. The game is a must for all arcade adventurers.

LAW OF THE WEST

► *C64 ● U.S. Gold ● Strategy ● Francis Jago ● £9.95*

Budding Clint Eastwoods, eager to take after him and become sheriff of their own towns, will find *Law of the West* fits the bill perfectly. To keep your town running effectively you have to deal smoothly with the townsfolk and yet be tough enough to command respect from criminals.

To aid you, your holster is packed with a hefty-looking Colt and your draw is as quick as they come. Once loaded, the screen is filled with a view of your right-hand side and a background. Graphically, Law of the West is exceptional. The backgrounds are all very detailed and vary from views of the bank and saloon to the railway station.

As each screen is loaded from disc, your image remains the same and new characters appear with whom you must converse. Depending on your reaction, they will either be friendly or aggressive. You must decide how to deal with gamblers, drunks and the town madame, to name but three.

If you manage to last until sunset, a screen shows how many innocent people were killed, how many crooks you managed to imprison, and then a score.

However pleasant the graphics, the game suffers from running on the incredibly slow 1541 disc drive – and on tape it would be unbearable. One thing the game has is atmosphere; the music is very man with no name-esque and the feeling of power when you beat the Mexicali Kid to the draw is immense.

GRAPHICS ●●●●●
SOUND ●●●
PLAYABILITY ●●●●
VALUE FOR MONEY ●●
OVERALL ●●●

Apart from the loading speed and the question about how long it would remain playable, Law of the West is very enjoyable for a short time. Whether it is worth the price is another question.

BOBBY BEARING

► *Spectrum ● The Edge ● Marble Madness ● Lee Paddon ● £7.95*

So you thought *Spin Dizzy* was the best Marble Madness game you were going to get? Well, hold on to your hats, this is better. All you had to do in Spin Dizzy was determine how to get through the various rooms and pick up objects. This game adds a whole new dimension to that.

Trapped somewhere in the 240 screens are five little cousins of Bobby, the hero bearing. You guide Bobby in his quest to bring home the bearings. To do so you must negotiate various hazards such as falling, being squashed or mugged by the mutant bearings which inhabit curvispace.

Curvispace is a new innovation in this type of game – indeed in any type of arcade game. The game includes the usual slopes and edges you must avoid but also has curved areas involving momentum, gravity and gradient, along with all the other problems.

Just getting round the maze is tricky but your problems have scarcely started. Once you have located one of the bearings you must guide it back home. That is done by nudging another bearing with Bobby. Then the screens, which presented only a small hazard to Bobby on his own, become impossible. That gives the game incredible depth. The only way you will have a chance of getting anywhere is to have an intimate knowledge of the map and the puzzles presented by each room. Only then will you feel confident that you know the safest route home wherever you find a fellow bearing.

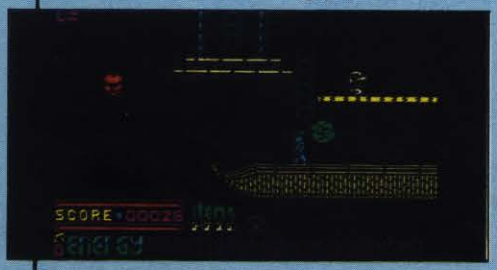
It is always tempting to say, whenever a game of this calibre is released, that surely it is as far as they can take the Spectrum – until the next blockbuster is released. Without doubt this game is the state-of-the-art in Spectrum games – graphically superb and a rattling good game to boot.

GRAPHICS ●●●●●
SOUND None
PLAYABILITY ●●●●
VALUE FOR MONEY ●●●●●
OVERALL ●●●●●

DYNAMITE DAN II

► *Spectrum ● Mirrorsoft ● Platform ● Lee Paddon ● £7.95*

Like an old movie star, unaware that times and tastes have changed, our hero, Dynamite Dan, after a year off for a quick face lift and a nose job, has made a comeback. A year ago, platform and ladder games were king but *Knight Lore* changed all that, an event as profound as the advent of talking pictures.



Down in the Mirrorsoft Sunset Boulevard, time has stood still. There are 200 screens divided into eight islands each of 25 screens. On each island, you must find a record, insert it in the juke-box, find some fuel to refuel the zeppelin, and then on to the next island.

There are 32 types of object scattered around the place which have various effects, such as giving you inexhaustable energy, allowing you to swim, getting past various obstructions and making you more difficult to zap. There is, naturally, an entire rogues gallery of beasties out to get you, including your arch enemy and super-villain Dr. Blitzen. Those nauseating nasties also steal objects you are carrying, which can prove a little awkward if one steals your means of escape just as the island is about to blow.

Lively, colourful and occasionally humorous, if you are disenchanted with arcade adventures and marble madness clones this will prove a pleasant trip down memory lane.

GRAPHICS ●●●
SOUND ●●●
PLAYABILITY ●●●●
VALUE FOR MONEY ●●●
OVERALL ●●●

PYRACURSE

► *Spectrum ● Hewson ● Arcade Adventure ● Lee Paddon ● £9.95*

Deep in the dank, mysterious depths of the remote South American jungle, four brave heroes prepare to confront the perils of the cursed tomb of Xipe Totec. You control the four chums as they search the tomb, battle hideous monsters, foil dastardly plots and escape certain death at every turn.

Just when you thought every conceivable variation on the arcade adventure theme had been played out, Hewson has to produce a game which will make everyone sit up and take notice.

The whole screen scrolls quickly and smoothly as your chosen character moves about. You can move only one character at a time but teamwork is often essential, as one character might trigger a trap and another character has to effect a rescue. With 100 screens worth per level, and three levels, just mapping this game will be a major achievement.

A great deal of work has been put into making the game playable. All the controls can be from the joystick; selecting characters, dropping, using and manipulating objects are all actions done in commonsense ways. Certain characters are good at certain things. The dog finds things in the dirt, contact with Daphne gives other characters an energy boost – don't ask how – and Legless O'Donell is good for the donkey work.

Fans of comic strip heroes like Tintin, Scoobie Do and Indiana Jones will find the game strikes a chord with the humour and style of those classics. This game has depth, fun and an almost contemptuous degree of technical prowess.

GRAPHICS ●●●●●
SOUND ●●
PLAYABILITY ●●●●
VALUE FOR MONEY ●●●●
OVERALL ●●●●●

SOFTWARE SHORTLIST

GHOSTS AND GOBLINS

► *C64 ● Elite ● Arcade ● Francis Jago ● £9.95*

With this, its second arcade conversion, Elite has shown just how playable a game can be. Based on one of the biggest-selling arcade games, *Ghosts and Goblins* is another Capcom game which has translated well to home micros.

You must control the movement of a daring young knight, whose only point in life is to fight his way past a plethora of evil beings until he can finally rescue his sweetheart who, not surprisingly, also happens to be a princess, from the clutches of the demonic overlord.

Having been released simultaneously on the Commodore 64 and Spectrum, the programmers have stayed as close as possible to the arcade original, right down to the Goblin's tattoos.

Although both are equally playable, Chris Butler's Commodore version manages to stretch the machine further than Keith Burkhill's Spectrum version.

Graphically, both versions are good, although the lack of multi-coloured sprites on the Spectrum means that the figure is sometimes difficult to distinguish. One problem the Commodore version had was the abundance of small bugs, not all of which are helpful.

As you would expect, the Commodore sound is far superior; the surprise, however, was that it was not a Hubbard soundtrack. For fans of the arcade original, Ghosts and Goblins is a must, whatever computer you own. It is an excellent game in its own right. Above all, it is great fun and a great challenge.

GRAPHICS ● ● ● ●
SOUND ● ● ● ●
PLAYABILITY ● ● ● ●
VALUE FOR MONEY ● ● ● ●
OVERALL ● ● ● ●

TRAP

► *CBM64 ● Alligata ● Shoot-'em-up ● Lee Paddon ● £9.95*

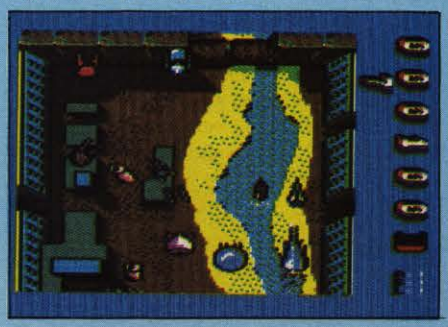
Tony Crowther has long been considered a member of the triumvirate of great Commodore programmers but for some time he has done little to justify that reputation. Now *Trap* has arrived, and will do much to restore his reputation.

The game is a simple, no-nonsense shoot-'em-up. The screen positively teems with alien meanies just waiting to be shot. The first stage takes place in outer space, with a shoot-out much in the style of *Galaxian*. Next there is a Zaxxon-inspired screen, where the ship must be piloted between gaps in the wall.

To complete the level, all the enemy must be wiped out. They come in several forms – ground targets which must be bombed and ships to be shot, each having its own characteristics of firepower and movement. After all that, the ship must land and a Commando-style blaze-away ensues where the object is, once again, to leave nothing alive and pick up some orbs. Collecting orbs permits a choice of ships to tackle the next level, each ship having differing capabilities.

While perhaps lacking a little originality, there are so many good things it is sure to be a winner and confirms the renaissance of Alligata as a producer of high-quality, original games.

GRAPHICS ● ● ● ●
SOUND ● ● ● ● ●
PLAYABILITY ● ● ● ●
VALUE FOR MONEY ● ● ● ●
OVERALL ● ● ● ●



SOCCER '86

► *Amstrad ● Loriciels ● Simulation ● Ian Nicol ● £9.95*

If you were one of those people who could not get enough of the football during the World Cup and found yourself staying awake until the early hours, watching video recordings of the games, *Soccer '86* may well help you to survive until the next football season starts.

Football simulations have gone a long way since the days of *Football Manager*. Instead of trying to select the best team and then watching the match highlights, you take a more active role as one of the players and attempt to dribble, pass and shoot your way to success.

The pre-match menu offers the choice of starting the match, selecting a one- or two-player game, or adjusting the energy levels in the teams. It is interesting to note that although the game is played on a full-size pitch, there are only five players on each side. Each team lines up by centre spot and waits until its country's national anthem is played. As the whistle blows the conflict begins.

You can only control one player at a time, the one nearest the ball, and his shirt is a lighter colour. When the ball approaches another player, his shirt becomes lighter and you take control of his movement. All the other players are controlled by the computer, including the goalkeeper, who always makes his best attempt to save any shots.

At times, rare bursts of skills matched only by those of the great Diego 'Hands' Maradona are seen as one man takes the ball from one end of the pitch to the other, eluding all the players in his path and easily beating the goalkeeper at the end; at least the computer does that – I have yet to manage such a feat.

The sounds of cheering crowds in the background help to add to the feeling of realism but without a band at half-time and toilet rolls to throw, there will always be something missing.

GRAPHICS ● ● ● ●
SOUND ● ● ●
PLAYABILITY ● ● ● ●
VALUE FOR MONEY ● ● ●
OVERALL ● ● ● ●

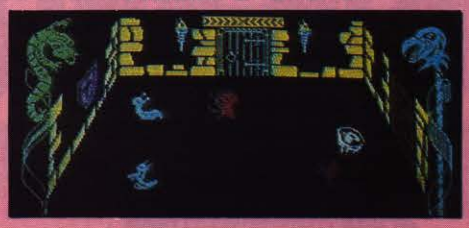
CONQUEST

► *Spectrum ● Mastertronic ● Arcade Adventure ● Lee Paddon ● £2.99*

OVERALL ● ● ● ●

To say that Mastertronics budget games often look like full-price games is to state the obvious. While the latest offering, *Conquest,* may lack originality, it is an *Atic Atac* clone and it is a perfectly presentable game.

Our hero rushes round his castle zapping meanies and picking up objects. Once he has cleared a room, he can find time to look at the various objects he has collected. First on the list is some kind of weapon, followed by some method of curing any snakebites he might have acquired. Simple, no-nonsense stuff from the company which knows how to sell 'em.



WHITE VIPER

► *Commodore 64 ● Creative Sparks ● Arcade Adventure ● Ian Nicol ● £1.99*

OVERALL ● ● ● ●

Take a step back in time to a land of damsels in distress, wicked wizards and evil spirits with this fairytale adventure. Once upon a time in a land far away, a beautiful princess was kidnapped and held captive in a castle across an enchanted marsh. As the brave and fearless knight, *White Viper,* you decide to attempt to rescue her. Only by capturing the white horse, crossing the lake and defeating the wizard's monsters can you hope to live happily ever after.

RADZONE

► *Amstrad ● Mastertronics ● Platform ● Lee Paddon ● £1.99*

OVERALL ● ● ● ●

Is it just imagination or has there been a sudden rash of nuclear-related computer game plots? Perhaps the game is written first and the plot line added at the last minute. What we have here is a rather pretty platform game where the object is to go round picking up radioactive debris and decontaminating it.

The more pieces of debris in the room the quicker you die, so speed is critical. Once you leave a radioactive room, or manage to decontaminate one, you can recover slowly. Mastertronics really is setting the pace in budget software. This is another offering which is good-looking and good value.

FINGERS MALONE

► *C16 ● Mastertronics ● Platform ● Lee Paddon ● £1.99*

OVERALL ● ● ●

Platform games have a long and honourable pedigree. This offering represents a reasonably good combination of most of the recurrent themes. Rush round the screen collecting things. Other things are rushing round the screen after you. Fast and colourful, the game has 15 screens of quick-fire fun. While not offering much in the way of a cerebral challenge, C16 owners will find it a good example of the genre. Pick up the keys, pick up the money, open the safe and it is on to the next screen where the monsters are meaner.

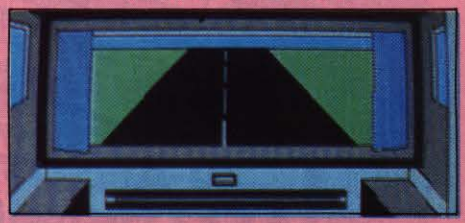
SPY TREK

► *Amstrad ● U.S. Gold ● Adventure ● Ian Nicol ● £2.99*

OVERALL ● ● ● ●

As the country's top spy and ace secret agent, it is no surprise to find yourself in a coffin at the beginning of the game. In an attempt to throw the enemy off the trail, the government has faked your death to assist you on your deadly mission to recover secret plans from Europe.

Impressiuve high-resolution graphics screens set the scene and the large vocabulary helps you to enter commands. As with all adventure games, the major frustration with *Spytrek* is the inability to cheat. Each brain-teasing problem must be solved before moving to the next stage.



PUD PUD

► *Spectrum ● Americana ● Platform ● Lee Paddon ● £2.99*

OVERALL ●

The second wave of Americana software has arrived in the U.K. but this kind will not do the reputation the U.S. Gold budget label any favours. It bears a 1984 copyright logo and looks its age.

You go round floating from platform to platform eating things. Certain things are good to eat, others not so good. There is a scale of energy at the bottom and when that expires you lose one of your three lives. How many points can you score before that happens?

Budget software no longer means poor software and most people will probably think the less they see of it the better.

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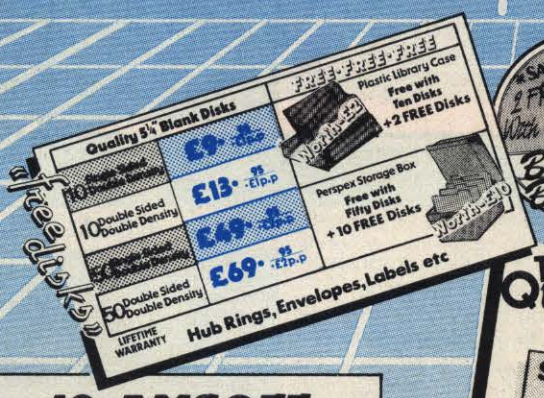

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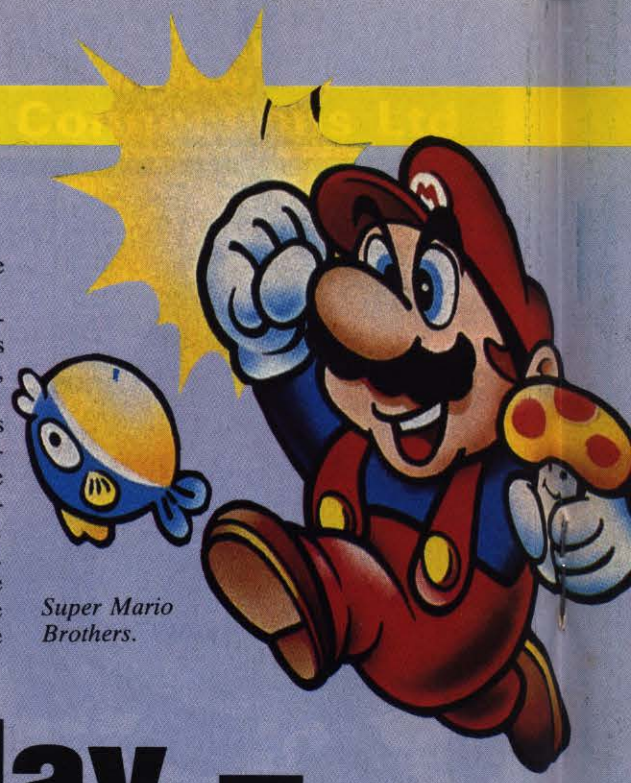


Super Mario Brothers.

Arcade today – micros tomorrow

Francis Jago looks at all which is new and innovative in the arcades and makes some predictions about when some real classics might be converted to the home micro, and by whom.

With most of the computer world drooling over the so-called endless possibilities of the Commodore Amiga, how would you like a machine which has 1.2MB of RAM purely for graphics, 32,000 available colours, a 16-bit processor running at 10MHz, and two 8-bit processors backing it up? That is the specification of Space Harrier and at £6,000 it shows just how far arcade game development has gone.

At some point, almost everyone has entered an arcade and deposited some money into one game or another and then wished they could afford to buy that game and take it home. Three weeks later, however, if you returned to the same arcade, the machine would have gone and would have been replaced with something even newer and with better graphics.

It is that phenomenon which explains the trend of software houses for obtaining permission to clone arcade games, thereby saving programmers time thinking about an idea. Only in the last year have the really big software houses been producing games such as *Commando* and *Yie-Ar Kung-Fu* which were big smashes in the arcades, only to be big hits on home computers.

How long it will continue depends absolutely on how sales of the games progress but if the current games are converted, we are due for some real treats.

Just when you thought driving games were dead, both Atari and Konami produce new and improved variations on the theme. The Konami game is a combination between *Pole Position* and *Hang-on,* a motorcycling version of Pole Position. In an attempt to make the game more realistic, Konami has included both brake and accelerator pedals, as well as the more usual high/low gears and steering wheel.

Called *GT,* the Komani game involves driving from section to section of a long course without running out of fuel. As each stage is completed, the next is more difficult and you have less starting fuel. To make the game a little more exciting, you are racing not only against cars but extremely fast motorcycles.

Super Sprint.

Although the graphics of GT are good, with excellent definition of all the cars and motorcycles, the most impressive feature, as with many of the current arcade games, is the sound – even down to the turbo-charged car you are driving, which has amazingly effective turbo-whine whenever it reaches boost levels.

The newest Atari racing game takes a different approach. Based on the very early arcade circuit racing games, though much updated, and now with incredible graphics and sound, Atari has decided to opt for the multi-player feature, adding an edge of competition to every game.

With three steering wheels, and three accelerator pedals, *Super Sprint* can be played by one to three players, with anyone being able to join at the beginning of a new race.

Super Sprint takes an aerial view of proceedings but the graphics are sufficiently detailed to allow each racer to see obstacles clearly, of which jumps, gates, banked turns and hidden short cuts are only a few. To increase competition among players, they must compete to collect gold wrenches which appear randomly on the track during the game. Those wrenches can be traded for custom car features such as super traction, higher top speed and turbo acceleration.

For people who travel to arcades in groups, games such as Super Sprint represent a perfect solution and if they continue improving at the current speed, there should soon be three-player 3D versions

Gauntlet.

Ro

of sit-down Pole Position. Of the multi-player games, the first and still one of the most popular is *Gauntlet,* which should soon be in the shops, courtesy of U.S. Gold. Originally a four-player game, a new version has just been released for two players. If you are a fan of *Dungeons and Dragons,* Gauntlet is definitely for you. The graphics and sound are excellent and the speech is truly incredible. Suffice to say that in my view this game, and *Marble Madness,* are the two best games to have come out of the arcades.

Trojan.

If you go to any of the really big arcades at the moment, the chances are there will be one game which dominates the whole room. It will almost certainly be *Space Harrier.* It is the latest and most advanced of the sit-down genre of arcade games – only Space Harrier does not remain static.

Using a series of hydraulic pumps, Space Harrier moves in a backward/forward, horizontal and diagonal direction whenever the joystick is moved. Combined with graphics and sound worthy of television, it is not surprising that Space Harrier has won a plethora of awards all over the world.

Older arcade afficianados will be amused to hear that Atari has also released a game based on a very famous if a little old cartoon character. *Road Runner* gives you the satisfaction of playing the bird, while the computer must control the frustrated Wile.E.Coyote. In keeping with the cartoon series, you are encouraged to tempt Wile E and rewarded if you are successful.

All the cartoon features are included – massive magnets, Acme glue and birdseed. The Road Runner animation is worthy of Walt Disney and certainly makes some home computer games look about 20 years old.

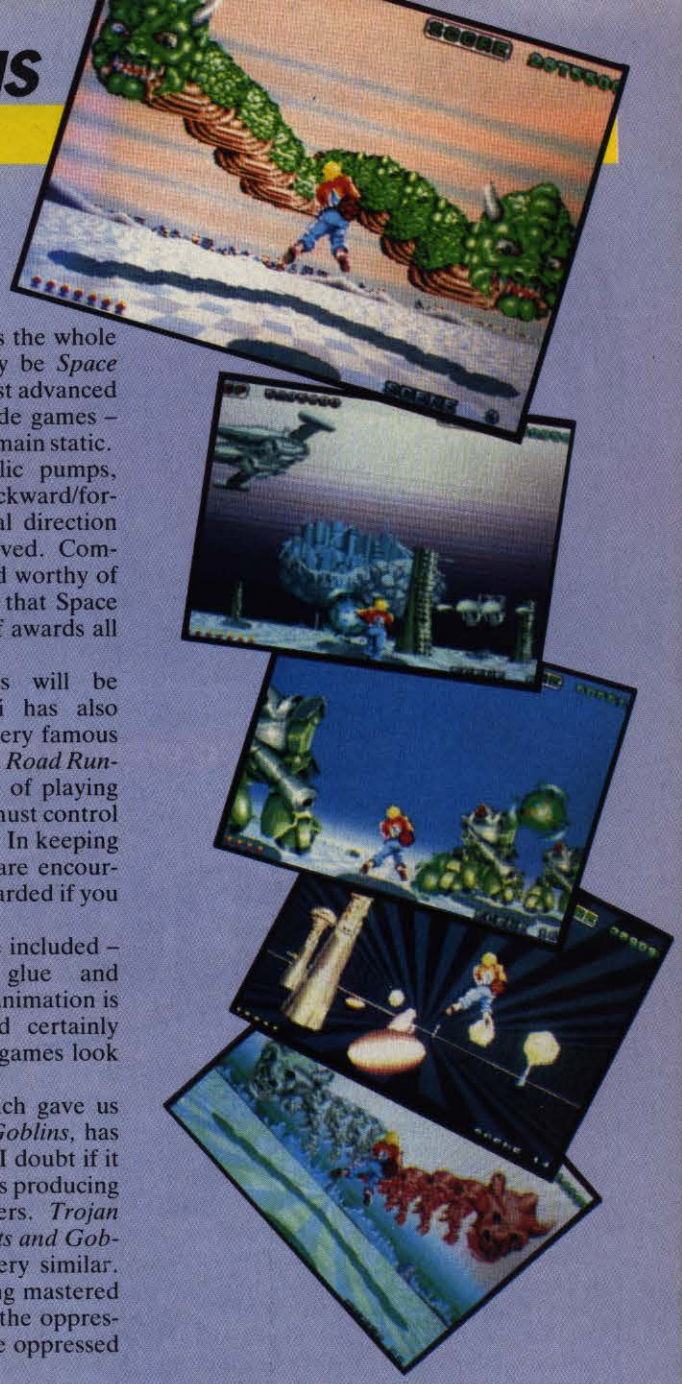
Capcom, the company which gave us *Commando* and *Ghosts and Goblins,* has released its newest game and I doubt if it will be very long before Elite is producing a version for home computers. *Trojan* uses the same system as *Ghosts and Goblins* and is also graphically very similar. You play a knight who, having mastered all the martial arts, must kill the oppressive King and thereby free the oppressed people.

As well as your martial arts skills, you are also provided with a sword and shield, without which your task would be less than enviable. If Trojan is converted to home micros, it would undoubtedly be a hit as it is both exciting and very playable.

One of the more surprising hits recently are the Nintendo range of games. Including games such as *VS Super Mario Bros,* they are much less advanced technically than many other games but much more addictive to play, as they have that illusive "just one more try" feeling. For real arcade fans, the new Nintendo machine would be a godsend, if it is ever imported, as it gives you the power of an arcade machine in your home, except that you are not restricted to one game.

With the close ties of Ocean to Konami, it is likely *Salamander,* the Konami latest and greatest shoot-'em-up, will be the next title for conversion. Arcade games are improving remarkably quickly and games such as Gauntlet and Salamander are perfectly-suited to home micros. Let us hope they live up to the originals.

Right: Space Harrier.



Road Runner.

Can Nintendo bring arcade action into the home? Francis Jago decides.

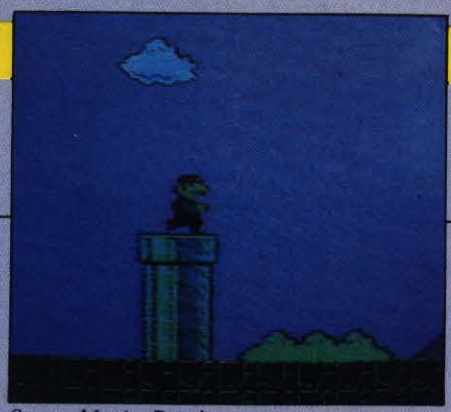
Arcades for all

When Atari released its games console about four years ago, it took the world by storm, selling many thousands of units and creating a massive demand for home arcade machines. However much fun the Ataris were, they had graphics and sound which were, to say the least, unimpressive.

In an attempt to create a more authentic games machine, manufacturers such as Coleco also released games consoles but they in turn were too expensive, particularly for the U.K. With the advent of high-quality, colour home computers for less than £200, the demand for the Atari and Coleco machines gradually faded, although the demand for games did not.

Recently, however, news filtered from Japan that Nintendo, one of the world's biggest arcade games producers, had finally achieved every child's dream and released an arcade machine for the home. It transpired that for roughly £100, plus £10-£15 for each game, you could buy a console with two joycards which produces graphics and sound of identical quality to the arcade original.

When Nintendo Europe confirmed that it was looking for a U.K. distribution deal, it seemed about time that someone looked at the potential of this arcade clone.



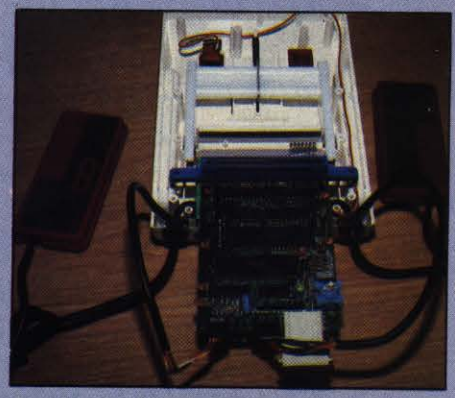
Super Mario Brothers.

The first surprise of the Nintendo was its size. Measuring less than 8in. by 5in., there scarcely seemed sufficient room for a ZX-81, let alone a full-blown arcade system. Only when the machine was turned on did it become apparent that the Nintendo really was a machine of potential.

If you have visited the arcades recently you can scarcely fail to have noticed a game called *Super Mario Bros.* Having plugged the cartridge into the Nintendo, I was stunned. Not just the graphics but the sound and feel of the game were identical to the machine into which so many people had poured their 20 pence pieces.

What seems to have made it a success – in Japan more than five million copies of Super Mario Bros have been sold – is that all the big arcade houses seem to have converted their games. Not just Nintendo, but also Konami, and it seems likely that many others will follow.

What makes the Nintendo such good value, apart from the quality of its graphics and sound, is the fact that games become available only weeks after they appear in the arcades – no more waiting 18 months for a software house to convert a game. A prime example is *Nemesis.* At present the most popular game in the arcades, Nemesis has converted perfectly to the Nintendo and could easily justify the initial price.



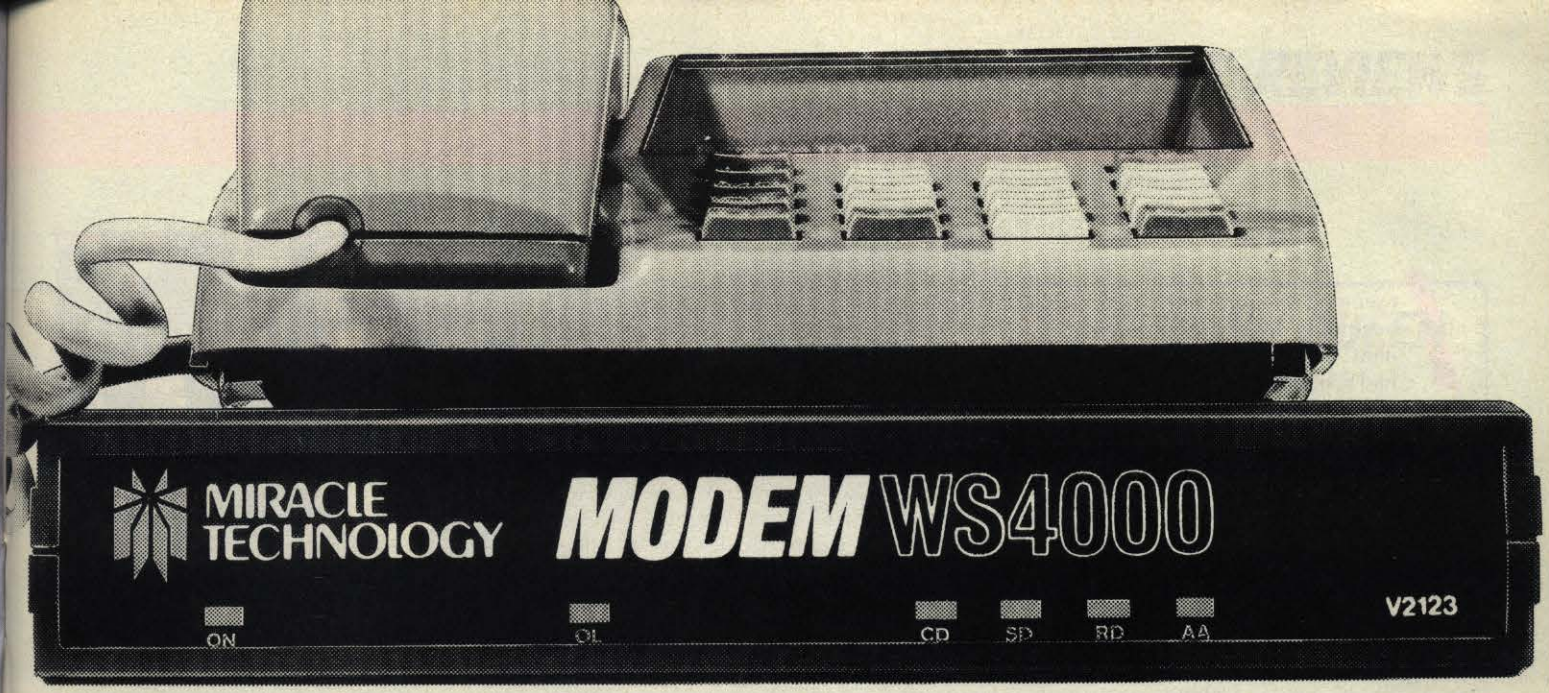
Inside the Nintendo.

Other arcade favourites include *Kung Fu Master, Pinball,* and a Commando-type game, all of which are immensely playable. One small problem are the joycards, neither of which are conducive to excellent play.

For the dedicated games player, the Nintendo represents state-of-the-art games for the home. No longer do arcade fans have to be satisfied with limited on-screen colours, small sprites and poor music. Although not even available in the U.K. yet, it is suggested the price will be around £150 for the console, which represents stunning value.

Perhaps the only stumbling-block is that many people believe that Nintendo will decide to package the machine as a computer, with keyboard, disc drive and MSX-style Basic. That would be a mistake; the Nintendo is a great games console and that is how it ought to stay.

The Nintendo, together with some of the available games.



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Books on screen

Roger Garrett reports on electronic novels.

It seemed that interactive fiction was beginning to become rather stagnant. The only games appearing all had a similarity about them, mainly I suppose because adventure writing concerns had gone through most of the Orc-bashing, cave-exploring, futuristic worlds scenarios. Occasionally an original game would appear but that was a rare occurrence. There is no doubt that what we needed was an influx of new ideas.

Of the new adventures appearing on the British market none could really be called original or innovative. Quill, even though it is a fine utility, seems to have replaced programming ability.

What was needed was something to stimulate the imagination of the adventurer and so a few companies began looking in other directions for ideas. What better place to look than to the multitude of books adorning their bookshelves?

That idea must have also appealed to adventure writers because we are now seeing the start of a turn-round in interactive fiction. Gone is the day when, on loading a game, you are confronted with abysmal descriptions such as "You are in the cellar; you can go East and West". This creates as much atmosphere as a wet blanket. No more do we have to "Go Door" or "Enter Window"; we expect to be entertained, not bored.

Adventures are beginning to overshadow arcade games for pure inventiveness and enjoyment. Heralding the new wave of adventures is an American company, Synapse, which, I bleieve, is about to turn the adventure world upside down with the imminent release of three truly amazing interactive games, *Mindwheel*, *Essex* and *Brimstone*. They are the finest examples of interactive programming I have seen. Each has a vocabularly of more than 1,500 words. Text descriptions are superior to anything I have seen, including those from Infocom, and the depth of playability is beyond description.

In Mindwheel you play the part of a Mind Adventurer. The Earth is teetering on the brink of self-destruction. You have been chosen to perform the most crucial and daring of rescue missions. Only by journeying back telepathically to the first moments of civilisation can you retrieve The Wheel Of Wisdom. Your voyage will cast you into an interlocking matrix of four extraordinary minds. Although those individuals are dead, their thought patterns survive in a kaleidoscopic realm of shocking episodes and mutating images.

The minds of the matrix are Bobby Clemons, assassinated rock star; The Generalissimo, hideous criminal of war; The Poet, gentle composer; and Dr. Eva Fien, "the female Einstein". Only by negotiating the labyrinth of the four minds can you meet The Cave Master, a prehistoric, ape-like creature who guards the Wheel, which is the object of your quest.

You are propelled into Mindwheel by a neuro-matrix mind machine. Once there, it is for you to decide how the game develops. Only by using imagination, skill and intuition can you hope to survive the incredible adventure.

In Brimstone your task is even more difficult because you do not know what to do. Playing the part of Gawain, Knight of the Round Table, you fall asleep and the world unfolds before you, inhabited by creatures you could find only in your worst dreams. It is on the Eve of All Hallows when destiny beckons you. As you travel across a moonlight plain towards a shimmering castle which beckons you, the text is so descriptive that I looked over my shoulder more than once. On reaching the castle, you stand beneath the massive oak doors, knowing nothing of what awaits you. Soon you will discover what is known only to men in legend or nightmares.

Essex is completely different. Your mission is to find Prof. Klien, who has crashed his small space cruiser on a inhospitable planet. Speed is essential or the Earth is doomed to invasion by the war-like Vollchons and Klien is the only person who may be able to help. How do you save him? One way is possible. You must convince the infamous Captain Dee of the spacecraft Essex to embark on a rescue mission but you need to find him first and that will take some effort.

All three adventures contain some of the best text descriptions seen in an adventure game. Everything is played in real-time so you will find various inhabitants wandering in and out of the locations, as you would in a real situation. Talk freely to the people you meet. They hold valuable information which will help you win.

All three games were not based on published books. They were written specially by professional writers but just think of what we could be doing in the future – playing the part of Mike Hammer from the fertile mind of Mickey Spillane; entering the strange world of Stephen King, fighting in undiscovered lands a la Wilbur Smith. Anything is possible. The three adventures are disc only and, at the moment, available only for the CBM64, Apple and IBM PC.

BLACKSTAR

► *Amstrad PCW8256/CPC6128*
● *CRL Group Ltd* ● *Adventure*
● *Lee Paddon* ● *£7.95*

I remember playing this adventure more than a year ago on the CBM64, released at that time by CDS. I thought then it was a superb adventure. Released originally by SCR on the Spectrum, the game has gone the rounds but, as so often with adventure games, has lost none of its freshness and playability.

Set among the timeless scenario of an old castle, your quest is to find a mystical Orb and return it to the Lady Artemis. I know it sounds like 100 other adventures you have played but from the onset you get a certain feeling that this one is different. Lavish text-only descriptions, an abundance of locations in, under and outside the castle, plenty of mind-boggling problems, set this adventure among what I call the classics.

RAM-save, which you will need to use often, is also available by typing Freeze and Unfreeze. This is very useful in an adventure of this kind – programmers please note – when you know something nasty is happening just round the corner.

Among the cast of characters awaiting you in this marvellous tale are the proverbial Dwarfs, The Hydra – who said two heads are better than one? – our friend the Dragon – just waiting to heat you up – a wicked witch, who does a line in magical broomsticks and gingerbread; a touch of transformation but remember what the early bird catches, plus a multitude of devious people and locations which will keep you guessing to the end. One of my favourite adventures, which I am sure, will soon become one of yours.

GRAPHICS
None
SOUND
None
PLAYABILITY
●●●●●
VALUE FOR MONEY
●●●●●
OVERALL
●●●●●

MURDER ON THE MISSISSIPPI

► *CBM64/128 + Disc Drive*
● *Activision* ● *Adventure*
● *Lee Paddon* ● *£14.95*

I have always maintained that Activision is one of the most innovative companies releasing software at the moment. With *Murder* it bridged the gap successfully between arcade/text adventures and in doing so has produced a most thought-provoking and amusing jaunt.

The action takes place aboard the Delta Princess, an old-style riverboat bound for New Orleans in the days when men were gentlemen and villains were villains. Donning the mantle of Sir

GRAPHICS
●●●●
SOUND
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PLAYABILITY
●●●●●
VALUE FOR MONEY
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OVERALL
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Charles Foxworth, world-renowned sleuth, and accompanied by your faithful but insolent manservant Regis, you embark at St Louis looking forward to three days' peace and tranquillity, before disembarking at New Orleans. It is not long, however, before you discover that a dastardly crime has been committed and so you decide to carry-out the investigation yourself.

You must first establish the name of the victim and then, by questioning everybody and examining everything, you should be able to accuse the proper person before the riverboat reaches its destination.

All actions and commands are carried-out by using the joystick. Pressing the fire button reveals a menu, moving the cursor/finger to the command you want to execute.

When talking to a character a sub-menu is offered, with a variety of different things to do. All conversations can be recorded on your personal on-screen notepad for future reference.

The graphics are excellent and a joy to watch as you guide Sir Charles and Regis round the ship, opening doors, climbing steps and inspecting cabins for evidence. Overall I feel the game will have immense appeal for the arcade/adventurer. Nevertheless, for the purist adventurer, it could provide some light relief from treasure-hunting.

REBEL PLANET

► *BBC* ● *U.S. Gold* ● *Text-only adventure*
● *Roger Garrett* ● *£7.95*

SAROS – Search and Research of Space – devised the plan in which you, disguised as a harmless merchant, must contact various members of the SAROS spy network by visiting different planets deep in the Arcadian Empire and by learning secret codes. Eventually you defeat the queen computer which controls and organises the Arcadian troops. It is a fearful and arduous task but would anything less be up to your standard?

Mike Woodruff and his band of helpers have finally released *Rebel*

GRAPHICS
None
SOUND
None
PLAYABILITY
●●●●●
VALUE FOR MONEY
●●●●●
OVERALL
●●●●●

Planet. The version with which I struggled was the BBC text-only adventure but as I prefer my adventures without the embellishment of graphics it suited me.

Using a new adventure system designed by Roger Taylor, who has replaced Brian Howarth, the game will accept long sentences and acts on the commands with a very quick response time. The screen is the normal split-screen method. One quarter shows the location description while the remainder scrolls up showing input commands and responses. One thing I should mention is that you must read the location descriptions carefully because certain items you may need are incorporated into the location details, not as a separate entry, such as "You can see a gold bar". I like the method, which adds a little more realism to the game.

I do not think anybody will be disappointed with this adventure and I look forward to the next release, *Temple Of Terror*, from Adventure Soft Ltd.

THE SNOW QUEEN

► *Spectrum 48K/CBM64*
● *Mosaic Publishing Co*
● *Graphic adventure* ● *Roger Garrett*
● *£9.95*

Most people must have read, at some time in their adolescence, or have had read to them, stories by Hans Christian Andersen. From all those wonderful children's tales, Mosaic has, with the help of St Brides, brought to the computer that delightful story of Kay and *The Snow Queen*.

The story is about two small children called Kay and Gerda. One day, while playing in the garden, a sliver of glass falls into Kay's eye; also another sliver lodges in his heart. Those slivers were

GRAPHICS
●●●
SOUND
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PLAYABILITY
●●●●
VALUE FOR MONEY
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OVERALL
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not ordinary glass but part of an evil goblin's broken looking-glass, which made all objects look ugly instead of as they were, with the result that Kay became a bit of a pest.

The summer passed and when the first snows arrived Kay seemed to become more and more interested in the snowflakes, remarking how much more interesting than flowers they were. One day, while sledging, Kay tied his sledge to the back of a magnificent sleigh and was promptly whisked to meet the Snow Queen. It goes without saying that Kay fell under the Queen's spell and forgot all about Gerda.

What you must do is guide Gerda to the Snow Queen's palace and rescue Kay – not a difficult task if you read the story carefully but one I feel will appeal to all ages. If you like an adventure without violence, written in a gentle and witty manner, this could be the one for you.

AMX Mouse – leader of the pack.

A tale of mice, joysticks and things

Mary Sargent gets to grips with joysticks, trackerballs and mice.

Books could be written about joysticks – and have been – but finally it is a matter of personal preference. If you play many games on your computer you must buy a stick which feels correct for you. You may sit well back from the TV screen so you need to consider the length of lead you have with the joystick. It may vary from 3ft. to 8ft. depending on the model.

The second consideration is if it will tolerate heavy treatment. Internally, switched joysticks have either pressure pads, leaf springs or microswitches. Those with microswitches are likely to last longest. Names and models to conjure with are Wico, which also makes joysticks for much-hammered arcade machines; Flight Electronics, which also makes joysticks for industrial use; and Spectravideo, whose Quickshot range is much-favoured, especially by manufacturers offering interface-with-joystick packages – for the Spectrum, of course. At least one company traces its fortunes directly from the lack of a Spectrum joystick port.

Joystick port

Newcomers to the scene are the mercury-switched The Stick, the hand-shaped Konix Speedking, and the Cheetah cordless R.A.T. Not all makes and models will be available for all models of computer. There are pitfalls such as the auto-fire facility, designed to make shooting aliens easy but which can cause the fire button to stop working on some micros.

If you want a joystick, the advice is to try it in a shop or buy one on the recommendation of a friend and be prepared to spend between £10 and £20.

Two trackerball contenders are the analogue ball from Wigmore House, an import from the East selling for around £22, and the optical/digital Marconi RB2 ball at £59. From there the peripherals begin to become selective about the micro into which they are plugged.

The analogue ball will run on the BBC and the Commodore 64. Do not expect any software with it, though it should run on any analogue joystick software without too much difficulty. The Marconi ball, available for the BBC, has its own software on cassette. There are utilities, so that the ball can be used not only from Basic but can also take over the use of cursor keys in word processor programs such as *Wordwise* and *View*, and a stand-alone drawing package, *Paintball*. For Master 128 owners, a supplied ROM ensures that the trackerball works automatically with the View family software.

The advantage of trackerball over joystick is a matter of the degree of control. It is a precision-made item, a fact reflected in the prices, and the Marconi version compares well to certain of the rodents available. It is a realistic alternative to the more fashionable mice, if only because its size ensures a finer manipulation of the cursor. It is not dramatically cheaper, however, and the final choice, yet again, is a matter of user preference.

There is something infinitely user-friendly about the name of the mouse which, after all, is just a glorified piece of plastic designed to take you from one part of the screen to the other in the shortest time. There is a definite art to calculating the distance your mouse travels *vis a vis* the results on-screen, and some users never manage to appreciate the discrepancy between hand movements and computer reaction. Nevertheless, mice are breeding and now Wigmore House is marketing a furry one, there could well be a population explosion which will render joysticks and trackerballs as obsolete as the Oric.

It was AMS, of course, which pioneered the home-micro rodent by developing a mouse system for the 32K user-RAM/single-disc BBC. That resulted in the affordable Mousepaint and WIMP utility software packages which had hitherto been seen only on the Apple computers, Macintosh and Lisa. Software has always been an integral part of the appeal of a mouse and AMS has produced a great deal of it since the AMX Mouse nibbled its way into the BBC micro in January, 1985 with a sideways-ROM and paint-package at the then outstanding price of £90.

Other manufacturers of mice have taken appropriate steps to follow the AMS lead and have, in some cases, made their mice AMX software-compatible. That may well prove advantageous for the user as there is every chance that a common standard for mouse hardware will be adopted based on the AMS three-button design.

Atari, with its 520ST series computers, has anticipated the fact that one day all micros will be mouse-driven and has included a neat and well-made mouse, with WIMP software, in the price of its machines, leaving the older generation of micros – BBC, Commodore 64, Spectrum and Amstrad CPCs – to be served by peripheral manufacturers, whose wares are shown, as usual, in the buyers' guide table.

Depending on which micro you own you may have little or no choice about which mouse/software package you can select. The Amstrad has only the AMS package, which was unfortunately not available for review at the time of writing, while the Spectrum fares a little better with the AMS package and a Kempston mouse. The Commodore has three mice and so has the BBC. Points to look for when mouse-buying are the physical construction of the unit and the availability of compatible software.

The Kempston mouse for the Spectrum is typical of the breed, being a two-button rubber-coated ball device. As with most mice, the ball can be removed easily from its cavity, which is essential since all mice tend to collect fluff, biscuit crumbs and other foreign bodies; if they cannot be shaken-out, the operation of the mouse becomes erratic.

Ball slides

The inner works reveal that no short cuts have been taken in its design. There are brass spindles, ball-race bearings and a sprung idler wheel. Two PCBs hold the opto-electronics, a few other small components and the two click-switches. A black box interface is needed on the Spectrum, since that micro lacks any ports of which a mouse could make use, but even with the extra hardware the mouse costs a reasonable £69.99, which includes the highly-successful *OCP Art Studio* software.

The efficiency of the AMX mouse is hampered by its uncoated metal ball which tends to slide on many surfaces and that has attracted much

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criticism from the opposition. On the proper surface – a rubber-compound sheet is ideal – it is reliable. The AMX Mouse/SuperArt package costs around £75.

SuperArt is one of a number of offerings from a company which constantly updates and improves its software. It is excellent if you buy after the packages have been field-tested but not so good if you have one of the early versions. AMS is helpful about upgrades and advice but detailed review is difficult, since an assessment of one version of a software offering may not be relevant to later issues.

I consider *PageMaker* to be its best product, since you can use it for straightforward artwork as well as for its more widely-promoted magazine-making role.

Anamouse

Nidd Valley entered the mouse stakes with devices for the BBC A, B and Master series computers. Anamouse is promoted as being "not just another mouse" but a "new concept in positive mouse control," which does not affect the results so far as the user is concerned to any noticeable degree. What is interesting about it, though, is that it plugs into the analogue port on the BBC, thus making it possible to have something else plugged into the user port.

Digimouse, the second of its offerings, is an optical device which is in direct competition with the AMX and the Wigmore Megamouse. As such, it is highly competitive on price and will run AMS software. A large diameter rubber ball is set in its socket with no play whatsoever. That makes for a very stable mouse arrow on the screen but the hand pressure needed to move it is more than is needed for other mice. Digimouse has simple interface software on cassette and can run the large software offerings associated with AMS and Wigmore House. Versions of both Anamouse and Digimouse for the Spectrum 128, the Commodore micros and Amstrads are promised. Each mouse, which is extremely well-made, sells for £34.95.

Then there is Megamouse for BBC and Commodore 64, the one and only furry rodent of this selection. It has a large felt pad on its underside on to which a square of Velcro can be fitted.

Protection

That protects the rubber-coated ball when the mouse is not in use and is genuinely useful. The cost is around £63 but for that price you have a truly ergodynamically - designed peripheral which is a joy to use.

The technically-minded may note that it has a heavy rubber-coated ball and a low centre of gravity. Software offerings accompanying the mouse are all optional.

Cadmouse is a drawing package with a slight slant to technical drawing – dimensions and centre line can be placed on engineering drawings and there is provision for 45-degree hatching – but the handbook is brief and at £29.90 it has not a great deal to commend it. Alternatively, the Megamouse/PearTree *Artist* package may be purchased for £99 excluding VAT.

The Peartree *Artist* is a 16K ROM for the BBC and is an excellent colour-drawing package with animation facilities. For the serious user, it would undoubtedly be money well spent.

Kempston. £69.95. Kempston Micro Electronics, Singer Way, Kempston, Bedford MK42 7AW.
AMX Mouse. £40. Advanced Memory Systems Ltd, 166-170 Wilder spool Causeway, Warrington WA4 6QA.
Anamouse and Digimouse. £34.95. Nidd Valley Micro Products, Stepping Stones House, Thistle Hill, Knaresborough, N. Yorks.
Megamouse. £69. Wigmore House, 32 Saville Row, London W1X 1AG.
Datex Mouse. EEC. £76. (Commodore 64 only).
Magic Mouse. SMC. £60. (Commodore 64 only).
Bitstick 2. Robocom. £795. Robocom, Clifton House, Clifton Terrace, London N4 3TB.
Trackerball. Marconi. £69. Central Trade Exchange.

Jargon jungle

Joystick: There are two basic types of joystick, the switched (digital) variety and the analogue variety. The analogue type has two potentiometers inside it which convert the movements of the stick to a screen location. The switch type is much more akin to an aeroplane joystick – it gives directional information rather than an absolute position. Push a digital joystick up and your space defender travels up-screen for ever until you next move the joystick. Digital joysticks are inexpensive to manufacture and are ideal for computer games.

Paddles: Really an analogue joystick in disguise. The name derives from the original TV-Tennis games. There, you will recall, the position of the player's bat was directly proportional to the twist given to the paddle. Why the paddle is called a paddle and not a racquet or bat is one of the best-kept secrets of the micro revolution.

Trackerball: Effectively a low-geared joystick. It does not look anything like a joystick, of course; the user uses a finger or two to move the surface of a plastic ball, not a stick. The movement of the ball is geared down so that it needs a relatively large movement of the finger to move a small way on the screen. You lose speed of movement but gain accuracy. Trackerballs may be digital or analogue but in either case the output gives positional rather than directional information. Trackerballs need to be fairly substantial so that they stay still while you move the ball.

Mouse: Take a trackerball, make it small because the intention is to move it, turn it over so it has something on which to move (the ball), and you have a mouse. That is the Darwinian theory of mouse evolution. Mice are usually digital devices. They have speed and accuracy.

Bitstick: A precision analogue joystick which looks like a trackerball. Used for high-resolution drawing, it is available for the Apple and for second-processor BBC users. It is expensive.

Footprint: A measure of how much space the devices need to work successfully. Some joysticks are held in the hand and never touch the table. Their footprint is zero. The footprint of other devices is equal to their maximum width and depth and for the average joystick that is about 10 sq. in. The exceptions are the mice. Generally they run all over the table-top but how far they wander depends on their internal gearing. It is not uncommon to have to move a mouse some 24 inches to obtain a 4in. line on the screen.

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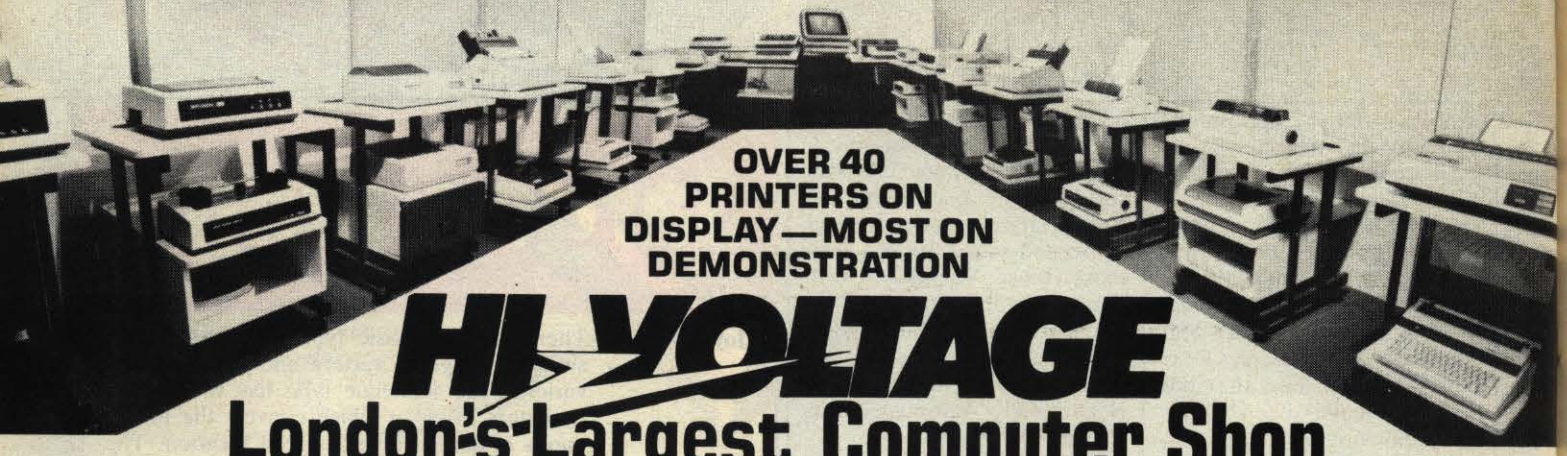

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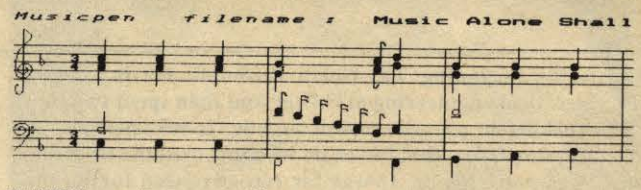

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PAGE 6 - *COMPLIMENTING AND EXPANDING THE WORLD OF ATARI*

Atari – power wi

From true backward beginnings, Atari has turned into big business in the micro world. Lee Paddon and Jim McClure

In the beginning was Nolan Bushnall. Having studied electrical engineering at college and then spent two years working in an amusement arcade, it was perhaps not too surprising that it was he who invented the first video game, *Computer Space*. It was far too advanced for its time and consequently was a flop. That did not prevent Bushnall in 1971, together with a friend, John Dabney, starting a company called Syzygy. It was during that period that Bushnall invented the first popular video game *Pong*.

As Pong started to take off, Bushnall changed the company name to Atari, which is the equivalent of check in the game of *Go;* and why not? In all, Pong sold 10,000 units and it, together with the countless copies, is still the biggest-selling arcade game of all time, selling even more units than *Pac-Man* and *Space Invaders*.

In 1973, Bushnall bought the company outright from Dabney and turned it into a multi-million dollar corporation which, in 1976, he sold to Warner Brothers for a massive $34 million, of which he is estimated to have gained $20 million.

Then followed a period of staggering growth. When Warner bought Atari, it presented one small part of its toy empire; at its height in 1982, the consumer electronics division was turning-over $2.1 billion. That was roughly half the turnover for the whole Warner group, with interests as diverse as films, video, TV and records.

From the fruits of success the seeds of disaster were sewn. The company had reached this position by doubling its turnover every year. So, in 1982, the company decided there was no reason its turnover should not double again and planned for a company with a turnover of $4.2 billion. Unfortunately, turnover was $1.4 billion, still a figure which dwarfed the rest of the world home computer industry; but due to ambitious expansion plans, it represented a loss of $538 million. Cutting back a company gone berserk was no easy business. In 1983, did Atari not know how many people it employed nor how many buildings it owned?

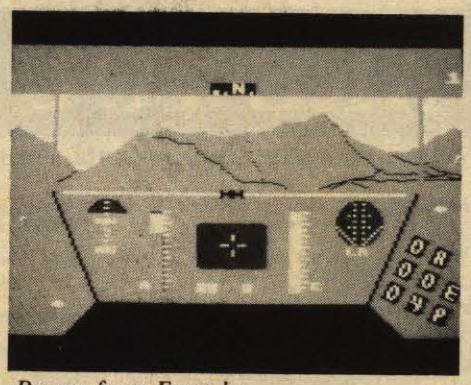
Then the axeman arrived in the form of James J Morgan. From its peak of 6,000 staff, by June, 1984 more than 4,000 people had been "let go". Then in stepped Jack Tramiel, who left Commodore in February and bought Atari, its chief rival, in July for a paltry $240 million, which was less than half the money owed to Atari by various creditors.

So what produced the great rise and the equally precipitious fall? In 1981, Atari ruled supreme. In the games cartridge market there was no competition. Then other people realised

Looking at Atari classic software is rather like writing a potted history of the arcade industry. *Asteroids, Defender, Missile Command* and *Pole Position* all appeared from Atari as perfect copies of the arcade originals. The game which probably did more than any other to show the way forward for the computer games industry was *Star Raiders*. In only 8K of RAM, it was a game which took longer to plan than the obligatory 30 seconds for which a "quarter"-hungry arcade game had been designed.

Graphically very pretty, while it lacked subtlety you could spend hours playing one game. The logical extreme of that was *Eastern Front*, which could take all day. It still looks good today when put up against some of the very best strategy wargames. As its name suggests, it is all about the German invasion of the Soviet Union in 1941. You play the Germans and must encircle and destroy the Russian units before they become too strong for you. The game is controlled by joystick, icons and menus, an idea way ahead of its time. The map scrolls over an area of about 12 screens.

More strategy games followed. *Mule* is a trading game, where the settlers of the far-off planet of Irata – Atari backwards – must survive the planet's hostile environment. The planet produces food, fuel and ore. The players trade between each other for the commodities they need. The way supply and demand works means there are endless ways of outwitting your fellow players. The graphics are functional rather than decorative but, with four players and a handicapping system, it is the kind of game to which you can return time and again, and there is always a different permutation of strategies to make it interesting.



Rescue from Fractalus.

Another in the strategy vein was *Archon*. Written by Electronic Arts in the U.S., it was the company's biggest-ever seller. It was an idea first seen in *Star Chess*, a cartridge game, where you had a chess board; pieces would not take each other – they would fight. Archon took that simple idea several stages further. When a piece was challenged, both pieces would move to a combat arena to battle it out.

There were magical overtones where, if you could afford the power needed, you could send in powerful reinforcements. If all this was not bad enough, the board would change colour regularly, swinging the advantage from one player to the other. Taking advantage of the periodic swing was the key to the game.

Back in the mainstream of arcade games, *Rescue from Fractalus* was released by Activision. It had a science fiction theme where you had to pilot your spaceship round the planet Fractalus, battling the aliens and trying to pick up survivors from the planet's surface. The game featured the best 3D graphics yet seen on the Amstrad, with hidden object removal and colour filling, instead of the more usual wire frame graphics. Despite all that sophistication, it still managed to keep the speed to reasonable levels as you skimmed over the planet's surface.

Other games which rate a mention

Basketball on XE

Jack Tramiel.

follow Atari's progress, discussing everything from the earliest games to the new 520ST.

how much money it was making and started producing cartridges; the price fell, many of the cartridge manufacturers went bust, dumped their stock on retailers and knoed the bottom out of the market.

If that was not bad enough, in 1982 the Commodore 64 was launched. It did nothing the Atari 400 and 800 could not do but it did it for half the price. Originally, the Atari machines had been engineered as competitors to the Apple and had to compete in terms of reliability and ruggedness. You could stand on an Atari – you could hardly breathe on a Commodore. Thus the XL series was born, which was simply the old Atari designed like a Commodore, and costing only around 30 percent as much to make as the old machine.

Those twin blows to soaring Atari profits proved to be sufficient. Combine that with a marketing philosophy which was not clear about whether the machine was aimed at the hobbiest or the games player and the end was in sight.

After the Tramiel takeover, the story has been one of slow recovery. The XL became the XE, with another re-design and twice as much RAM. Then the ST appeared, designed by Tramiel Technologies Inc. The new lean corporate image just buys and sells. The ST has a disc drive from Hongkong, a keyboard from Taiwan and a monitor from Malaysia.

The future now looks a great deal rosier for Atari. The ST has sold almost 200,000 units and the video consoles potter along. It would be a pity to see a company fail which is as synonymous with computers in the U.S. as Sinclair is in the U.K. Many companies owe their start to Atari. David Crane left to form Activision in 1978. Amiga was formed with the help of $0.5 million and then sold the resultant machine to Commodore.

without the price

include *Solo Flight* and *Flight Sim II*. Solo Flight is probably the more playable of the two flight simulators, but Flight Sim featured beautiful cockpit detail and very pleasant graphics of the terrain over which you were flying. There are several new scenery discs promised which will allow you to extend your wandering further afield.

One game which all self-respecting ST owners ought to buy is *Time Bandit*. Sold

in the U.K. by Microdeal, Time Bandit is an arcade adventure of massive proportions, combining excellent graphics with smooth animation and intricate sound.

As with *Major Motion*, Time Bandit is similar to an arcade classic – in this case the multi-player *Gauntlet*. The object of Time Bandit is to escape from each of the many mazes. To do that the character must first find and collect a key and only then is it possible to exit that particular layer.

It is very apparent that a great deal of

Time Bandit.

care has been taken with Time Bandit, from the amazingly detailed sprites to the beautiful backdrops and locations.

Time Bandit is a game suitable for people of all ages – and all types of games players. It combines arcade sections with more than a little adventuring and is a thoroughly enjoyable and long-lasting game which is set to be an ST classic.

Imported recently to the U.K. by Microdeal, Major Motion is one of the best games around for the Atari ST. Programmed by Phil Mackenzie and Jeffrey Sorensen, it is an excellent version of the arcade classic, *Spy Hunter*.

Taking control of the sleek sports car requires dextrous hand movement, especially considering the limitations of the ST mouse. Major Motion displays an aerial view of a vertically-scrolling road; on the road are various other cars, motorcycles and the occasional lorry.

The object is to travel as quickly as possible, shooting, pushing or otherwise disposing of as many of the enemy as necessary. At the beginning, you are equipped with only a machine-gun but the further you progress the more weapons you amass. To complete the game, it is necessary to have collected a wide variety of weapons, including missiles, oil and smoke screens.

As a copy of the arcade game, Major Motion is almost faultless. The graphics and sound are good, with great attention to detail, and smooth animation, but still they go nowhere near to using the full potential of the ST. What makes the game so good is its sheer playability. It is the type of game which is very easy to play hour after hour; for arcade fans Major Motion is a must.

Major Motion.

Midi on the ST

The Atari ST is one of only a select few micros with a built-in Midi Interface. Is there software to make the most of it? Tony Sacks looks in depth.

Lurking among the collection of inputs and outputs which inhabit the rear of the Atari ST computer is a pair of sockets which look as if they would be more at home on a hi-fi system. The sockets bear the legends Midi In and Midi Out.

The ST manual says the sockets can connect the ST to "the latest generation of electronic musical instruments" and can convert the ST into a "sophisticated studio recorder". Atari even mentions the possibility of their being used as the basis for a local area network but until recently there has been no commercial software to put the claims to the test.

You probably know that Midi stands for Musical Instrument Digital Interface and that it can somehow link the ST to instruments such as synthesisers and drum simulators. You might also be aware that it uses a serial link to communicate between those different items of equipment.

Transmission is at 33.35kHz, a good deal faster than the swiftest RS232 transmission rate, hence its attraction as a potential networking link.

Midi was drawn up originally by several electronic musical instrument manufacturers who wanted a standardised method for their products to communicate with each other. Midi specifies digital codes which tell an instrument which notes to play, when and how loud to play them, and much more besides.

Real-time

So the ST, with its 68000 powerhouse, should be able to demonstrate what Midi can do better and more conveniently than any other machine, provided it has the proper software. That software has been slow to appear. American software producers, responsible for the bulk of Midi software to date, have opted for better-established machines such as the Commodore 64/128, the Apple II and Macintosh, and the IBM PC rather than gamble on Atari.

The first few morsels of ST Midi software are now emerging and they give a taste of the powerful musical potential of the ST. Midi software falls into several convenient but sometimes overlapping categories. Probably the biggest group are sequencers which can be divided into step-time and real-time varieties.

Sequencers, not surprisingly, store sequences of musical notes. In the step-time sequencers, the notes are entered individually, either via the computer keyboard or via a musical keyboard connected to the computer by a Midi link. The notes can be specified at any convenient rate, thus making step-time input of music ideal for non-musicians or those musicians whose playing technique is limited.

For accomplished musicians, the alternative form of sequencer, the real-time system, may be more suitable. In that case, the computer acts as a tape recorder, storing strings of Midi information produced by a musical keyboard as the musician's fingers dance across the keys. That Midi information can be regurgitated by the computer later and fed back to the instrument to provide a note-perfect version of the original composition.

Real-time sequencers usually take the tape recorder analogy a step further by allowing the musician to record more tracks to accompany the original melody. Each track can be assigned a different Midi software channel, recognised only by Midi instruments tuned to that channel. An ensemble of instruments, each playing a different part, can thus be built.

Initial ST Midi offerings include sequencers of both types. The sole step sequencer to date is the Activision *The Music Studio*, written originally for the Commodore 64 and now adapted for the ST.

The Midi capabilities of this £34.99 package are the icing on the cake as it can perform most of its functions using the built-in three-channel ST sound chip. Tunes are composed by using the mouse to place notes on a musical stave.

The notes can be represented either by conventional musical notation or by coloured blobs of differing sizes corresponding to the length of each note. The latter option is designed to allow non-musicians to compose music intuitively.

Although the package should be able to drive any Midi-equipped instruments, it has been tailored as a partner for the Casio low-cost CZ series of synthesisers. Those instruments can generate four different sounds simultaneously on different Midi channels.

The Activision package exploits that feature with a special screen which allows different voices to be assigned to different Midi channels. Four demonstration pieces are included to show how this powerful option works.

The Music Studio offers a relatively cheap introduction to music-making on the ST. It can be used by ST owners who are considering entering Midi but cannot decide whether to commit themselves immediately to the £250 minimum cost of a Midi synthesiser.

Simple package

Such wavering is not possible for would-be buyers of real-time sequencers. Those packages will operate only in conjunction with Midi-equipped instruments.

The least expensive real-time sequencer to date is a Dutch-developed package called Midi Recorder, available in the U.K. from SECS of Birmingham. It is a fairly simple package, designed to operate like an eight-track tape recorder. Up to 12 hours of music can be stored on each track.

The Midi Recorder has few of the sophisticated editing facilities of the more expensive real-time recorders, nor does it allow different segments of music to be strung together to form a song; but for £69 less than the cost of the Midi interface for most other computers, it offers a relatively cheap entry into the world of real-time sequencing.

Best-selling

A rather more sophisticated and expensive real-time package has been developed by the German company Steinberg Research and is being marketed in Britain by OSC of Oxford. The package, called Pro-24, provides 24 tracks of simultaneous Midi data recording with a total capacity, for the 520ST, of around 100,000 notes.

Almost any editing function the musician might want has been built into this £250 pro-

gram which throws in a step-time section as a bonus. It is already being used by groups, including Dire Straits and Marillion. Several American software houses are also working on real-time sequencing packages for the ST but these have yet to reach our shores.

The second major use for the ST Midi ports is in sculpting the sounds a Midi synthesiser emits. The sounds, or "voices", of a modern synthesiser are defined by many interacting

ST

variables – more than 100 of them for some synthesisers. Although programming of the sounds can be done on the synthesiser, it is often very difficult to get a feel for how adjusting one parameter affects others.

One of the first sound editing packages in the U.K. is the £120 Pro-Creator, written by Steinberg for the best-selling Yamaha DX7 synthesiser. Although extremely popular, this synthesiser is particularly difficult to program, as more than 130 variables have to be defined to characterise a sound.

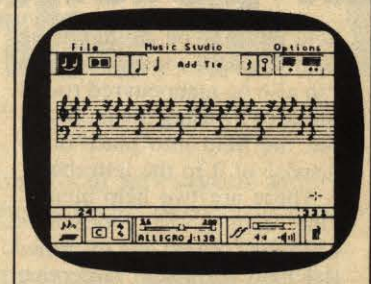
The Pro-Creator helps the synthesist by suggesting 32 possible variations on a proposed sound. An American software company, Hybrid Arts, has produced a rival DX7 programming package called DX-Droid, which uses "a combination of artificial intelligence and random number generation" to create new sounds for the synthesist.

The third type of Midi software is designed for a particular breed of music synthesiser known as a sampler. Those instruments should, more accurately, be called re-synthesisers as they operate by encoding real sounds digitally which can later be reconstituted by being fed back through a digital-to-analogue converter. The sampler is, in effect, a digital sound recorder. Sounds can be played back over a wide range of pitches by reading the digital version slower or faster from memory.

Where Midi, and hence the ST, come in is that it is useful to be able to tinker with the sound once it is in a sampler's memory. You might want to repeat a segment of the sound several times to give it a longer life than the original. Or you might want to get rid of glitches in the digital recording of the sound for a smoother playback.

Sound sampling

The easiest way to do such editing is to display the digitised sound as an oscillogram on a computer screen. The Atari ST with its high-resolution capability is ideal for the task. Hybrid Arts in the States has developed a package for the ST which uses the computer to edit sampled sounds for the Ensoniq Mirage, one of the most popular sampling keyboards. It is even possible



to create new sounds by drawing shapes on the computer screen.

Another possibility is to build a sampling system around the ST. A relatively simple analogue-to-digital and digital-to-analogue hardware interface used with the appropriate software would allow sounds to be stored in the ample ST memory. The ST has more RAM than most purpose-built samplers and could, in theory, retain longer-lasting or higher-quality samples than the dedicated samplers. The sampled sounds could be played back from the ST under Midi control from an external musical keyboard.

An American company, Hippopotamus Software, is reported to have produced a hardware and software package of this type but it has yet to appear on this side of the Atlantic.

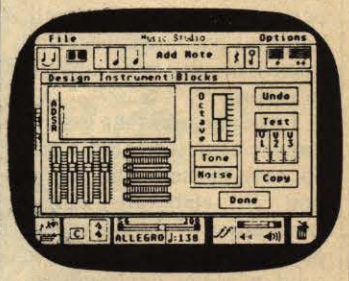
Sequencers, voice editors and sampling packages form the bulk of Midi software to date but there are a few other packages which demonstrate further uses for the ST Midi interface. Eidersoft is planning a series of games for the ST which will include Midi-encoded backing music. As you play the game, so will any synthesiser connected to the ST through Midi. A less frivolous and considerably more costly use for the ST sockets has been found by a German musical software specialist, Jellinghaus. It has developed a package for the recording studio engineer which uses the ST to memorise the settings of various controls on the engineer's mixing console. Volume levels for up to 32 channels can be stored and recalled instantly and changed automatically at different points in a recording.

Notable gaps

The initial Midi offerings for the ST cover a broad spectrum of applications but there are still some notable gaps in the ST Midi catalogue. There is no package which will take the flow of information arriving from a Midi-equipped musical keyboard and transcribe it to a musical score. Such programs already exist for the Commodore 64 so the ST with its more powerful processor and graphics display would be an ideal candidate for that type of package.

Ironically, one of the reasons Midi software has been slow in arriving for the ST could be the built-in interface. Its presence could be deterring software writers for several reasons. First, it deprives them of potentially lucrative sales of Midi interfaces for the ST like those they have been supplying for other machines. Second, some software suppliers use their interfaces as "dongles" to protect their software packages. The software will not run with other interfaces. The ST built-in interface precludes that possibility.

Third, the ST does not include a port for synchronising the operation of the Midi



software packages with other devices such as electronic rhythm boxes. Most commercial Midi interfaces include one or more ports of that type.

Fourth, the provision of just one Midi Out socket on the ST could be a limitation, especially for multi-track packages such as the Steinberg Pro-24. Because Midi is a serial transmission system, the Midi data has to queue to leave the ST single Midi Out port. Delays can occur which can result in instruments being noticeably out of time with one another, especially if many instruments are connected in a daisychain formation.

Promise

To circumvent the problem, most commercial Midi interfaces include two or more Midi Out sockets. It could be tackled by the ST by using an extra interface to split the Midi Out data stream among several Midi Out sockets.

Despite those snags, the ST is already showing considerable musical promise. If the first few software packages are any indication of the musical uses to which the ST will be put, we could be hearing much more from the ST and from Midi-linked electronic instruments.

Databases on the Atari ST

The concept of WIMP has dispensed with the laborious task of learning a new language and instead uses icons, clicking and dragging. Using the mouse in that fashion may become tedious and create unnecessary demands on the software to perform in a way in which it does not become counter-productive moving from keyboard to mouse.

Trying to assess the essential requirements of the mouse is no easy matter. The temptation to elaborate on the capabilities of the ST requires plenty of self-control to form a solid working environment a database requires. *Laserbase*, one of the two databases reviewed this month, illustrates how having too much power at your fingertips may be a hindrance rather than an advantage.

Laserbase ST has three distinct programs on which it is constructed. The first is designing a layout, the second using the layout and the third designing a report.

Designing a layout consists first of making a password to allow entry into a record when inputting data to the database. A series of icons will appear on the left-hand side, permitting a multiple of tasks to be performed to the sketchpad where all the layouts are constructed on the right-hand side of the screen. The maximum size of the card is 20 screens wide and 20 screens long. They scroll in the same manner as the *Firstword* word processor.

The first procedure seems to be inverted. On *Trim* the field is given a name, followed by field. On Laserbase, a field is created first by dragging the size of the field into shape and then labelling it. Defining the field is done by clicking on the appropriate icon on the left-hand side of the screen where a window will display a number of variables which can be altered, whether it be the amount of decimal places in a numeric field or the format in which the date is to be displayed.

Calculations on fields can be performed by selecting the calculator icon and specifying the fields to be calculated. The result can be highlighted using either a thicker border where the result is to be displayed or washing the background with a number of tints. There is also a number of styles of arrow to direct the user inputting the information round all the screens before accepting the card and saving it.

Using the layout is straightforward but trying to remember the security code is a different matter. After recalling the layout, the cursor appears in the first field and a series of icons appears on the left-hand side of the screen displaying save, next, prior, read, re-start, remove and calc.

The calc icon will calculate the fields which have been specified when making the template; if the data should be edited on the card it will re-access the outcome of the calculation.

To sort the information, conditions for the search have to be set up either by making a comparison with another file or one which is specific to that file.

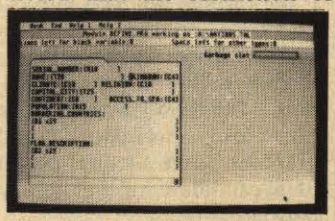
Laserbase ST certainly takes some understanding. A certain amount of self-control is needed when constructing a field but an attractive result can be achieved.

Trim has full potential

The Talent Relational Information Management or, as Talent likes to call it, Trim, has been released into the business side of the ST market. Trim is a relational database which combines the database manager with a report generator. The full flexibility of no language required and using the vast processing power puts Trim ahead of the rest.

Like other databases, Trim requires the creation of a new record to define the layout and parameters on which the file is to be based, a relatively easy task provided that the basic GEM concepts are understood.

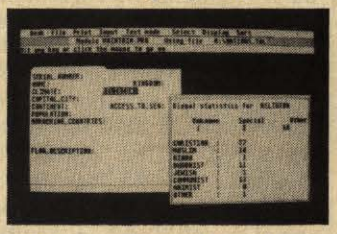
Entering the Trim DEFINE. PRG icon will permit the creation of a new template. The style of the data has first to be decided, as there are four options available, twentieth century in American or English or AD dates in American or English. After deciding that, a series of pull-down menus will appear at the top of the screen. Choosing DEFINE CARD permits either the update of an existing card or the creation of a new one. New card screens consist of a template with a record card number, which is mandatory, and a selection of menus. The size of the card is the first factor and is limited to one screen; defining the size of the card using the mouse and putting the card into shape is straightforward. It should be noted that the restriction of



fields and their variables has to be taken into account when designing the size of the card, though the size can be changed if the fields should not fit after being entered on the card.

Fields are defined by typing-in the heading followed by return. At that point a drop-down menu appears, giving five values to define the field with number, date, text, block and class. Those values require you to define the length of the field but may be altered if the field should be too short. Fields can also be manoeuvred round the card by using the mouse to put the field into place or to dispose of it in the letterbox.

There are two help menus. One defines the procedures and their context and the other the field variables. Accepting the card is obtained by selecting the END menu and naming the file on the route menu, where it can be recalled in the maintenance program.

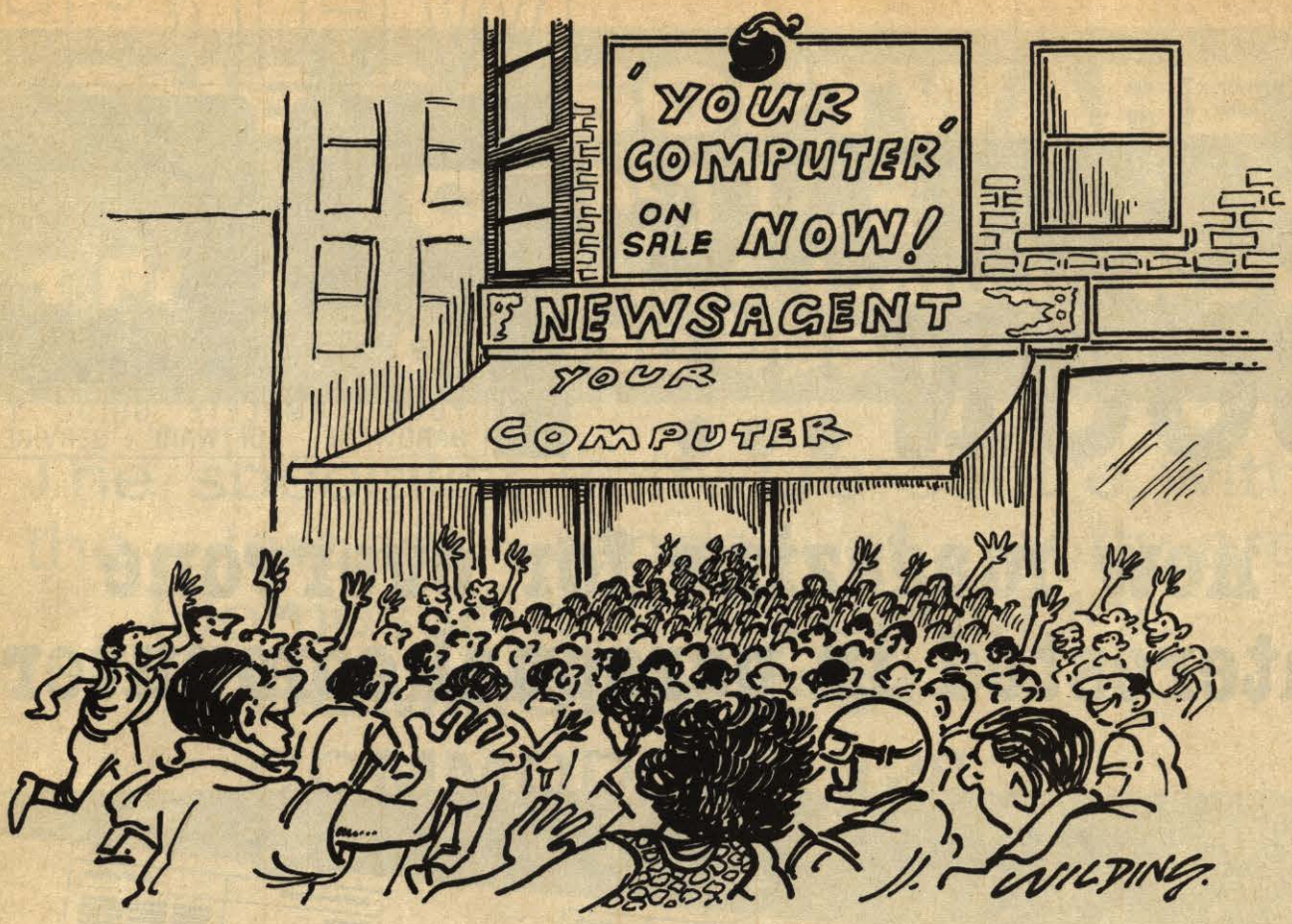


Having specified the format of the card, the input and maintenance of data can be achieved in the MAINTAIN. PRG icon. A route menu displays the template file names. Recalling the template will permit a number of tasks to be applied to the file.

Selecting the INPUT menu will permit data to be entered into the designed template, either by importing the data from another file which already exists or entering new data on to the designed card.

Under the DISPLAY heading, the option for creating a statistical analysis of all the records or selected records is made by selecting a field from the template. A window will appear showing the number of records in the file and will define them into different categories. Trim will do an alpha sort on all the records – if specified – display the first and last record, the longest and shortest name and other mathematical functions where data has been entered as numerals.

That is where Talent has taken the full potential of the vast processing capacity the ST possesses, though the opportunity to display graphs and pie charts to illustrate the compiled data on the excellent ST graphics has gone amiss. Apart from that, Talent has made an excellent product which should do well at £89.95.



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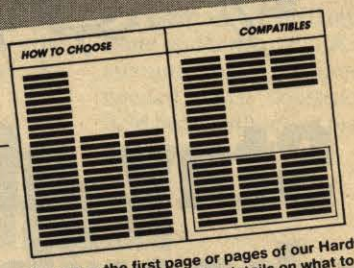
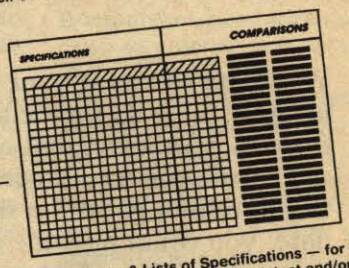


How to Choose — the first page or pages of our Hardware and Software Guides is devoted to details on what to look for and how to compare different products. Each is terminated by a checklist with tick boxes, so that potential buyers can make their selection systematically.



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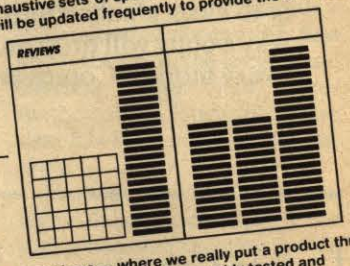

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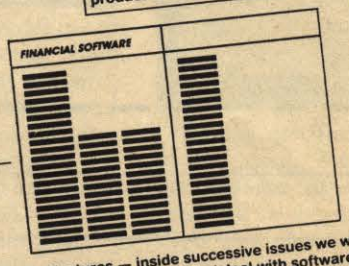
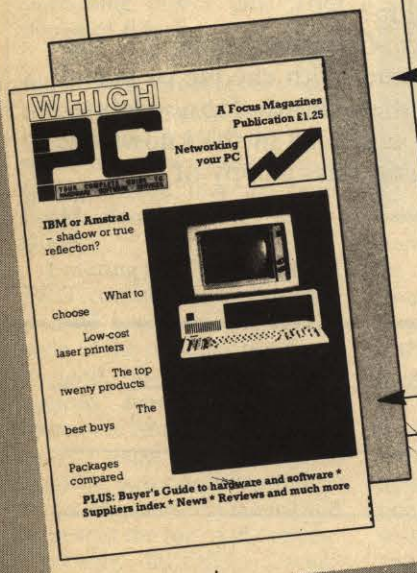


Specialist Features — inside successive issues we will focus on a particular interest group and deal with software aimed at those groups. Issue one will deal with financial software.



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Basic bugs

I deal with the membership records for a number of clubs and societies and, attracted by the large memory and so-called 'powerful' Basic of the Atari 520, recently upgraded to that machine.

Having spent a long time converting and typing-in my programs, I was dismayed to find that I could not get them to work properly, members' names and addresses being converted to unrecognisable garbage. Although my dealer insisted that the problems were of my making, I was sure that the faults lay with the machine.

To test that, eventually I wrote two short routines, one which writes five strings to disc and the other which recovers them. They may interest anyone interested in buying the Atari, as they demonstrate the capacity of the machine to totally corrupt data stored on disc.

D Hewson, Nottingham.

```
SAVED TO DISK
1 "AZZZZZZZZZZZZZZZZ............ZZZZZZZZZZZZZZ"
2 "BZZZZZZZZZZZZZZZZ............ZZZZZZZZZZZZZZ"
3 "CZZZZZZZZZZZZZZZZ............ZZZZZZZZZZZZZZ"
4 "DZZZZZZZZZZZZZZZZ............ZZZZZZZZZZZZZZ"
5 "EZZZZZZZZZZZZZZZZ............ZZZZZZZZZZZZZZ"
RECOVERED FROM DISK
1 ""
2 "ZZZZZZZZZZZZZZZZ............ZZZZZZZZZZZZZZ"
3 "BZZZZZZZZZZZZZZZZ............BBBBBBBBBBBBBB"
4 "CZZZZZZZZZZZZZZZZ............CCCCCCCCCCCCCC"
5 "DZZZZZZZZZZZZZZZZ............DDDDDDDDDDDDDD"

10 OPEN"O",1,"DATAFILE"
20 FOR X=1 TO 5:A$(X)=CHR$(X+64)+STRING$(200,"Z")
30 PRINT#1,A$(X):NEXT X:CLOSE

10 OPEN"I",1,"DATAFILE"
20 FOR X=1 TO 5:LINE INPUT#1,A$(X):NEXT X:CLOSE
30 FOR X=1 TO 5:FOR Y=1 TO LEN(A$(X)):PRINT MID$
   (A$(X),Y,1);:NEXT Y:
   PRINT:NEXT X
```

These two short routines highlight the problem of bugs within the Basic of the Atari 520 by showing the corruption which occurs when saving and recovering files from disc.

Spectrum disc

I decided recently that a disc drive was the only answer to the dubious reliability of the Sinclair Microdrive unit. The Opus Discovery imitates the operation of Interface 1 and cannot be used at the same time.

The makers suggest that to transfer from Microdrive to disc, the files should first be transferred to tape. It occurred to me that the signal from the MIC socket of one Spectrum could surely amplified and set directly to the EAR socket of another. If one was connected to the Microdrive and the other to the disc unit, the need first to transfer to tapw would be eliminated.

Using a hi-fi amplifier to boost the signal the system worked. The sequence is: 1*, Command the receiving machine to LOAD the item from tape. 2*, Command the transmitting machine to SAVE the same item to tape.

R A Hands, Chester.

Cheat at Elite

While playing *Elite*, I discovered that if you sell more than 10kg. of platinum at a time you will not receive the credits you are owed. So if you have 50kg. to sell, you should trade 10kg. five times. I have also discovered a way of entering Witch-Space: 1, freeze the game; 2, press key X; 3, restart the game.

If you then enter Hyperspace in the usual way but hold down the CTRL key during the countdown, you will enter Witch-Space. There will be about four Thargoid invasion ships surrounding you when you emerge, so be ready to detonate an energy bomb.

M Knowles, Worthing.

Double height

Since the Amstrad CPC range was introduced, several methods have been suggested for producing double-height characters. My method is considerably easier to use than many others, although it has a few snags; the screen tends to wrap around from the sixth row down to the border and from the 18th row to the top.

```
10 MODE 0: INK 0,0:INK 1,26:
   BORDER 0
20 PEN 1:PAPER 0
30 OUT &BC00,0:OUT &BD00,
   127
40 FOR I=1 TO 25:LOCATE 1,i
50 PRINT" FLASHY AINT IT?"
60 NEXT i
```

S Minifie, Devon.

Dodge for Yesod

In the adventure game *Nodes of Yesod*, pressing Enter to pause the game and then P will make you fly up from the bottom of very deep chasms. There are, however, two rules to be observed:

Before entering the chasm, you must have opened both of the mole holes at the top; before you take off it is important to ensure that you are facing the correct way as you cannot control that in midflight.

J Campbell, Doncaster.

Warning sign

A tip for *Pitstop II* on the CBM64. On the two-player game, if a car is in front of you but not in sight, a small flashing dot will appear on the side the car is on. That gives you plenty of time to change lanes and avoid a crash.

M Roberston, Formby.

Hobbit moves

In the adventure game *Hobbit*, to be able to get the golden ring which gives you the power of invincibility and invisibility you should first find the Sword of Light and then find your way to Beorns House. Once there, follow the directions NW,W,NE,N,SW,U,W,SE,S, N,SW.

You can then take the ring and wear it. To leave, go N,D,N, open the crack then go U and S. If you then continue east you will reach Beorns House again.

J Campbell, Doncaster.

Packing them in

Why does the packaging of games in the U.K. compare so badly to programs from the U.S? I know programs there are more expensive but surely that extra cost cannot be all due to the cost of packaging.

For instance, Microprose games are supplied in A5 boxes with discs and long instruction manuals giving all kinds of background information. By the time it reaches this side of the Atlantic it has become a twin cassette pack, with a thin instruction leaflet with minute, unreadable instructions.

When will someone realise there is a market for well-produced, well-packaged games, with plenty of instructions and plenty of background material?

Bill Goudy, Walsall.

Broken promises

Bobker's letter in the June *Your Computer* was like a breath of fresh air among the current Amstrad idolisation in computer magazines. When I sold my CPC464 and bought the 6128, page one of the manual stated that in keeping with the Amstrad policy of compatibility, the 6128 will run all programs written for the 464 or 664. It certainly did not. I promptly returned the computer to the shop and had my money refunded.

I now own a Spectrum+ and am amazed that I ever bothered to struggle with the Amstrad Basic. I have now added a disc drive and, despite the "limitation" of a 48K memory, it knocks spots off the Amstrad and is far cheaper. I shudder to think what the new Amstrad-Spectrum will be like but I hope that Bodker will be around to give us an honest review.

S Massey, Cumbria.

G A Bobker's letter, Unfriendly Amstrads, published in our June issue has prompted a large number of replies. We have published a few examples.

Right to reply

It is obvious from Bobker's letter in the June issue thast he has spent too long using Spectrums and learned all the bad habits that can teach. I use regularly, for work and pleasure, Spectrum, Amstrad and BBC computers, so I am well acquainted with the Basic of all of them. In my opinion, Amstrad Basic has the greatest number of advantages, taken from an overall point of view.

BBC Basic is perhaps more powerful and slightly faster at some tasks but it tends to be difficult to read, due to the habit of stringing together program lines into one long 'word' to save memory.

As for the Spectrum, apart from the method of string-handling which is more flexible and easier to use, there is little else to praise. The ability to use variables in GOSUB, GOTO and RESTORE lines, which Bobker feels to be so essential, is probably the biggest failing of the machine.

It may make programs easier to write but it also makes them much more difficult to debug as you can never be sure to where the program is jumping. As for Bobker's claim that the majority of programs written for the 464 will not run on a 6128, it is not true. I have yet to find a 464 program which will not, although it is sometimes necessary to reclaim the memory used by the disc drive. Even then, I would think that most 128K Spectrum owners wish that was the case with their machines.

D Foster, Kendal.

King Spectrum

I am writing to say how much I agree with Bobker's comments on the Amstrad range of microcomputers in the June issue of *Your Computer*. Amstrad is fast becoming the Ford Motor Co of the computer industry. It can do no wrong, every new product is received with lavish praise, and none of its faults is ever mentioned.

Last year I wrote a suite of business programs for the Amstrad CPCs. I found all the faults mentioned by Bobker – and many more besides. The Basic syntax is incredibly fussy – a space or semi-colon out of place can cause a program to crash – unlike the Spectrum, which avoids the problem by checking each line as it is entered.

Frankly I was appalled that Sinclair was bought by its arch-rival. Competition is healthy but now Amstrad has it all its own way. I feel much like a Tottenham fan would on hearing that his club was being taken over by Arsenal.

I prefer Sinclair Basic and, in my opinion, the Spectrum remains king of the home micros.

S J Denson, SD Microsystems.

Trains of thought

For the first time I feel that I must reply to a letter in *Your Computer*. I refer to the submission by Bobker in the June issue and I would like to point out that Locomotive Basic is very user-friendly and has many sophisticated commands to make Basic programming far more powerful, such as the interrupt commands EVERY-GOSUB, AFTER-GOSUB and also WHILE-WEND loops.

The GOTO variable is not needed on Amstrad machines, which have the far superior and more flexible ON Variable GOTO and ON Variable GOSUB commands.

Compatibility between the 464 and the 6128 is very good – far better than that between the 48K and 128K Spectrum. So far as 'antique Microsoft systems' are concerned, the Spectrum is the only computer I know which still uses compulsory LET statements and having to name the variable in a NEXT statement is the most antique piece of Basic I have encountered.

I believe Alan Sugar bought Sinclair not to produce a real home computer but to help a rapidly-failing company and put some new life into an ageing product.

A D Balmforth, Gainsborough.

Take note

Now that the implications of the Amstrad takeover of Sinclair are becoming clearer week by week, the apparent plans for ditching existing Microdrive owners by refusing to manufacture new cartridges has had more than a few owners concerned about their chosen form of storage.

I feel that the point should be made that Amstrad is obliged, by consumer law, to support owners for up to seven years after the Microdrive has ceased to be made.

M Clarke, London.

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Spectrum

TAPE SP07

POKER

Machine: Spectrum 48K
Program Type: Card simulation
Author: Simon Chivers

One of the safest ways to gamble. You cannot lose your shirt but you can lose your pride when the program gets the better of you. This well-produced program plays the full game of Draw Poker and gives you £100 with which to start. A cautious approach and plenty of luck may give you the satisfaction of winning but if things take a turn for the worse, and they probably will, the machine will allow you to go into debt.

TAPE SP08

MICROCITY

Machine: Spectrum 48K
Program Type: Board game
Author: Mark Henry

Microcity is a computer version of the all-time classic game of *Monopoly*. Everything from the original game is here, including jail, chance, community chest, houses and hotels, mortgaging and so on. The menu-driven game caters for one to four players, with the computer playing as many roles as you wish.

TAPE SP07

THE GRID

Machine: Spectrum 48K
Program Type: Arcade
Author: Graham Creasey

Deep inside the heart of the central processing unit you discover the grid network. It has been corrupted by images of the past and is now protected by deadly hypertron-powered destruction machines. Your only hope of returning to the outside world is to battle your way through each of the 50 grids until you reach safety. One interesting feature is the ability to re-design the screens to make your task slightly more or less difficult to achieve.

TAPE SP08

THE ELMIR

Machine: Spectrum 48K
Program Type: Adventure
Author: Tycho Lamerigts

The Elmir is a 100 percent machine code fantasy adventure. There are more than 90 locations and plenty of problems needing to be solved along the way. Some problems are simple while others can be difficult but if you find it all too easy, it is all against the clock.

CBM 64

TAPE CBM07

BOOTS

Machine: CBM64
Program Type: Platform
Author: Mark Mainwood

Boots, a highly-advanced robot, has crash-landed on a mysterious and previously-uncharted planet. To his horror he discovers that the two types of alien inhabitants, the Z-Bots and the Z-Balls, are both hostile. For him to escape, you must guide him through 24 terrifying zones, collecting the Zyconium crystals needed to repair his spacecraft to allow him to return home.

TAPE CBM08

PUSS 'N BOOTS

Machine: CBM64
Program Type: Arcade
Author: Gerard Duffy

The aim of this fast-action machine code, sideways scrolling game is to clear up your alley. You control a cat with, of course, nine lives, but they will quickly disappear as you are beset by rates, crows and even someone throwing hobnailed boots.

INSTRUCTIONS FOR USE

Software Exchange tapes are not supplied with any paper documentation – all instructions relating to the use of the software are provided as text files at the start of the programs.

To load the software the following instructions should be followed unless otherwise stated within the description of the software.

AMSTRAD CPC
Press CTRL – control key – while at the same time holding down the ENTER key.

CBM64
Press the SHIFT AND RUN/STOP keys.

SPECTRUM
Type LOAD"" then press the ENTER key.

BBC
Type CHAIN"" then press the RETURN key.

»Software Exchange«

CBM 64

TAPE CBM07

INVASION OF THE KILLER TOMATOES

Machine: CBM64
Program Type: Shoot-'em-up
Author: Russell Wallace

Earth is being invaded by hoards of huge killer tomatoes. They fly down at breakneck speeds, smashing through everything in their paths. Only you and your trusty laser weapon can hope to stop them and prevent the destruction of thousands of innocent victims. Written mainly in machine code, the action is fast and furious and the impressive graphics make it a great value game for shoot-'em-up fanatics.

TAPE CBM08

DETECTIVE 64

Machine: CBM64
Program Type: Logic game
Author: Stephen Collins

This is a computerised version of the game *Electronic Detective.* A murder has been committed and the body found. It is your job to decide on the likely suspects and then to question them as to their whereabouts at the time of the murder. You can also check their fingerprints to see if they match those on the murder weapon – if you can find it.

Once you have asked all your questions you must piece together the evidence and solve the crime. The game can be adapted for one player against the computer or two players against each other.

Amstrad

TAPE AMS05

MENU DESIGNER

Machine: CPC464
Program Type: Utility
Author: Nicholas Kimberley

If you are one of those who dream of an Apple Macintosh and then wake in the morning to the harsh reality of your humble CPC464, this program may help you to sleep. It allows you to produce Macintosh-like menus for your Amstrad and included in the package is a demonstration program, using pull-down menus to create screen pages. Using this utility can give your programs a more professional look, as well as making them easier to operate.

TAPE AMS05

AMMON

Machine: Amstrad CPC464
Program Type: Programming utility
Author: Kevin Young

Ammon is a 100 percent machine code monitor, occupying 1,804 bytes of memory and with many of the features found on commercial programs of this type. The program will check through a machine code routine and allow any necessary adjustments or alterations to be made – an essential tool for any machine code programmer. Commands include entering ASCII, hex or decimal, calling machine code, display memory in hex or decimal, set breakpoint, fill memory and toggle lower/upper ROM.

BBC

TAPE BBC03

HAYWIRE

Machine: BBC B
Program Type: Arcade/logic
Author: J. P. Lord

This is an extremely clever and unusual game. Faced with a grid of connections, you must swap blocks in the grid to form new routes. In doing so, you must attempt to enable a small bubble car travelling along those routes to reach a particular destination. The bubble contains explosives experts and if they do not reach the target – the bomb – in time, there will be trouble. If this does not scramble your brain, nothing will.

TAPE BBC03

FRUIT MACHINE

Machine: BBC B
Program Type: Fruit machine simulation
Author: Shaun Hewitt

In excellent fruit machine simulation with many of the features available on the full-size one-armed bandit machines. A fast-scrolling screen produces a realistic simulation of a spinning reel while you try for the winning lines which will increase your money. You are also able to nudge, shuffle and gamble, all from the comfort of your home and without once having to dip into your pocket for small change.

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Hats off to Hatfield

Hatfield Polytechnic began as a technical college in 1952. When the Government announced its plans for education in the 1966 White Paper, A Plan for Polytechnics and Other Colleges, Hatfield was named, along with two others, as proposed for conversion. It was not, however, until 1966 that the official designation arrived. Today more than 5,000 full- and part-time students study the many courses available.

The first computer was a DEC-10 with eight magnetic tape drives and four disc drives, each with a capacity of 176MB. That was followed by the more powerful but smaller DEC-20 a few years later. At first, they were used by all the students for all their computing but later they were superseeded by seven of the more powerful VAX machines.

Hatfield's computer centre now provides a comprehensive service for the two main sites almost 10 miles apart. General-purpose computing is provided by the DEC-10 and DEC-20 machines, while the computing science school operates the Unix system provided by two VAX 11/750 machines, with four 456MB disc drives and one TU81 drive capable of transferring 468MB disc drives and one TU81 drive capable of transferring 468KB per second. They also use the slightly smaller VAX 11/785. With additional machines for the school of engineering and for polytechnic administration, more than 600 terminals are supported by the network.

Compact disc

In addition to the huge mainframe system, the polytechnic has several Sirius microcomputers and many IBM PCs, as well as 16-bit Duets, Z-80 processors and even the humble BBC model B makes an appearance in some of the engineering laboratories.

The computing science department naturally has the largest share of the computing power but computers are also used heavily by students of the engineering department. Much of their course work involves using computers to control mini industrial robots and scale models of factories working in real-time.

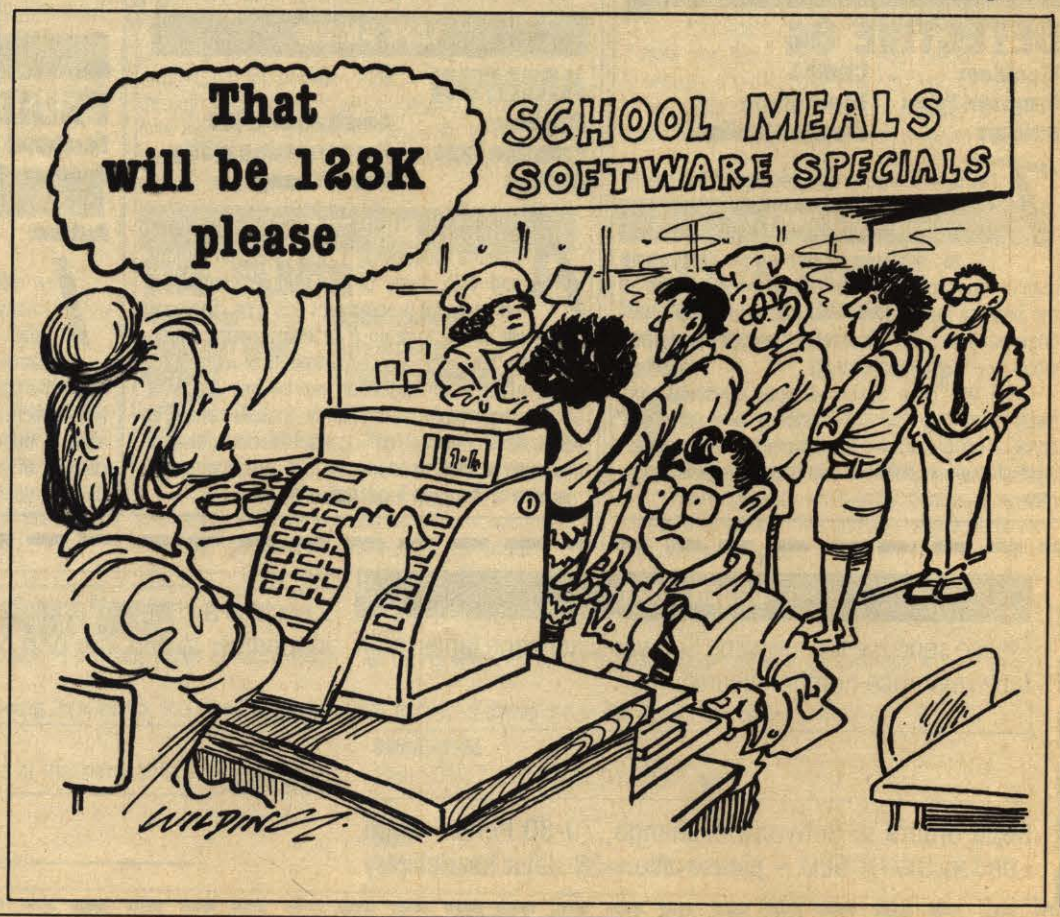
The computers are available to any student regardless of the subject being studied. The terminals are available for 24 hours each day, so any student who wishes to improve computer literacy should have no difficulty. Those who own modems could even study at home, if they could afford the telephone bills.

Hatfield has made a huge investment in ensuring that its students have suitable equipment with which to carry-out their studies. Much of the financial support is from the large number of research projects for various companies and institutions. They include transferring text files to compact disc, artificial intelligence, voice recognition and video digitisation.

With a huge network, capable of supporting 600 terminals, Hatfield Polytechnic has one of the best-equipped computer centres in the country.

To enrol on the Hatfield degree course in computer science, previous computing experience is not essential although it is preferable. David Doughty, a lecturer in electronic engineering, says that although it is not required, many of his students had worked with computers before joining the course, reflecting the trends in educational practice at primary and secondary schools.

Hatfield appears to have one of the best-equipped computer centres in the country. A recent survey of employers in a national newspaper placed Hatfield as the top polytechnic for computer studies. With even further expansion of the computer network planned and a LN03 laser printer to be made available later in the year, it will be interesting to see what the future brings.



We visited Datapower to discover the needs of the computer industry.

A helping hand

Competition for jobs in the computer industry, as with most professions, is fierce. Many home micro users with aspirations to becoming professional programmers have had their dreams shattered after a few unsuccessful applications to the major companies but their rejection is often caused by a lack of confidence or having the incorrect approach to the market.

Help, however, is at hand. Several specialist agencies exist to help people find jobs in the industry. We visited one such establishment – the Datapower Computer Employment Agency – to find what type of people the industry is seeking.

"To enter at operations level you need O levels or A levels but for programming a HND or degree in a computing subject is almost essential", says Warren Ledger, director of Datapower. "Most companies want graduates and will recruit direct from universities, but having a degree is no guarantee of getting a job.

"A mature attitude towards an interview is equally important. An employer wants someone who will not only work well but also be pleasant in the office and who will contribute to a healthy working atmosphere. They will look at an applicant's personality, attitude and keenness to get on as well as qualifications and experience."

There is no need to despair if you are not qualified to degree level; many opportunities still exist for those with A levels and some companies will recruit operators of O level standard.

Agencies cater generally for those who have some experience of the industry and wish to change jobs. The higher level of competition among trainees makes them more difficult to place.

Training courses

Datapower recommends looking in the computer pages of the national press and sending letters and CVs to large companies with computer departments as the best start. Your CV should always be typed and easy to read. Remember that the company will probably receive hundreds each day and any which are not presentable will simply be cast aside. Although most companies try to acknowledge an application, the number involved often makes that almost impossible and economically invalid.

"Datapower often has to rewrite a large number of the CVs it receives to improve the presentation. It is important to list your most recent experience first, so that a prospective employer can see what you are doing and decide if you should be interviewed. The large number of applicants means that they do not have a great deal of time to read about what you were doing a few years ago," he says.

If you are able to attend a short training course at a local college, that could improve your chances of success. It is best to ensure that any such course is Government-approved or your prospective employer may regard your application with suspicion.

Few companies will be interested in experience which you have gained on a home micro, especially if you have spent most of your time playing games, but it is always worth mentioning any serious programming which you have done, as it indicates a genuine interest in the industry.

Many people apply only to large companies and fail to realise the benefits of joining a smaller firm. Although the job will lack the security of a larger institution, you will experience a much wider range of tasks which will be to your advantage should you decide to move elsewhere.

If you enjoy working with computers but do not want to become a programmer or operator, there is a large requirement for client and sales support staff. They deal with enquiries from people who are having difficulties. Staff who can work in the servicing and maintenance field are also in demand.

Settle in sales

Vacancies for sales staff are also available. Only a certain type of person will succeed in this field. You need to have plenty of internal spark and be naturally ambitious. The best way to gain experience is by selling over the counter in a micro dealers. That will teach you how to sell and give you the confidence you need to help you succeed.

As sales and liaison jobs are not so technically biased as programming and operations positions, aptitude and ability are often more important to an employer than academic qualifications.

In the next few months we will be looking in depth at individual job profiles to prepare you better for finding a job. We wish to thank the Datapower Computer Employment Agency for its help in producing this article.

SOUTHGATE MICRO COMPUTER CLUB

Term-time talking

The Southgate Micro Computer Club was founded by electrical engineering students of Southgate Technical College in 1981 but, because of examination commitments, all the original members had to leave and although the club still meets at the college, it is now their only link. The dozen or so regular members meet, during term times, on a Wednesday evening between 7.30 and 9pm. The membership fee of £6 covers not only the hiring of the rooms for meetings but also the cost of posting newsletters and bulletins telling all members of future events and presentations.

Unusually, the club has a high proportion of computer professionals, with almost half the members having full-time jobs in the industry. All the members, not just those with professional experience, have the opportunity to give talks or presentations on a wide range of subjects. They have included Computers in Architecture, Programming with Pascal, Mastering Masterfile and, more recently, a talk about the business language Cobol.

The talks are comprehensive and are presented in a very professional manner. Programming with Cobol began with the early origins of the language, through the program structure and on to the practical applications, all with plenty of interactive discussion.

The club is open to beginners and experts alike and you need not own a micro to join. The members own mainly BBC, Amstrad and Spectrum computers but many have access to more powerful machines, such as the IBM PC and mainframe systems elsewhere. The talks are planned well in advance and a list of forthcoming events is displayed in many of the local libraries. Some may be of a technical nature but club members are adamant that there is always something for all to learn.

The average home user is unlikely to come into contact with languages such as Cobol or Unix, so the presentations give them an opportunity to learn a little about them.

"In other cases, attending a talk could stimulate an interest and lead someone to research deeper into the subject," one member commented.

The meetings, however, are not restricted to talks on advanced languages and computers in industry; games are also discussed and a meeting is planned where the members will pool resources and attempt to solve the popular adventure game *Hitchhikers' Guide to the Galaxy*.

"We used to have Any Questions evenings, where those with a little experience would help those who were having problems" says Kevin Pretorious, the club chairman.

"As the members became more computer literate, we found those evenings became less successful and were eventually dropped. We now aim to inform, educate and entertain those who attend meetings and to promote an interest and understanding of computing as a hobby."

Southgate recently joined the Association of Computer Clubs and hopes that it may be able to attract speakers to talk on subjects of wider range than what is now provided.

If you wish to join Southgate Micro Computer Club, contact Kevin Pretorious on 01-882 2282 any evening except Wednesday.

Your Oric

The Private Independent News Group is organising a newsletter devoted to the many Oric 1/Atmos owners who feel the available support for the machines is sadly lacking.

The group was started in 1983 and has regular meetings to discuss matters concerning their chosen computers. In an attempt to assist other owners to get the most from their machines and to put them in touch with the few companies still supplying software and hardware, it has produced a 16-page photocopied newsletter under the title *Your Oric*. For an annual fee of £8.50, subscribers will receive six newsletters covering the latest news on the Oric, hints and tips, software reviews and an adventure spot.

For details of how to subscribe, send an SAE to: Your Oric, 41 Morden Gardens, Mitcham, Surrey CR4 4DH.

C16 and Plus in Scotland

A Scottish-based user group for Commodore C16 and Plus 4 owners is about to be launched. A club magazine with news, reviews of hardware and software, interviews with software authors and competitions will be available for all members.

For further details of membership, send a SAE to: David Baxter, 42 Mount Stewart Street, Carluke, Lanarkshire, Scotland ML8 5EB.

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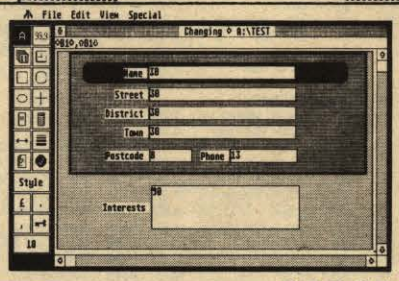

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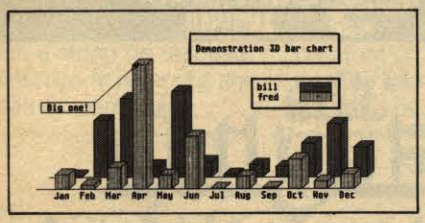

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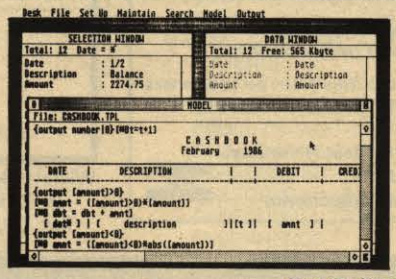

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PROGRAM LISTINGS

MUZIK

◆ *BBC and Electron* ● *P. Bender*

This program will produce patterns of random music on BBC and Electron computers. When the program is run, a choice of three scales – Scottish, Modal and Eastern – is displayed. The scale chosen will determine which notes are used in the melody which is produced by a step of one or two notes in either direction while moving slowly from one end of the scale to the other.

The notes are stored as strings of characters set up by a PROCscale; should the end of such a string be reached, the direction is reversed and the melody continues.

There is also a choice of two rhythm patterns, the data in lines 390 and 400 containing common note patterns for bars of 4/4 and 3/4 respectively.

Line 20 tests to see if the machine is an Electron so that the appropriate changes can be made to compensate for the single sound channel available.

All the parameters may be changed to vary the beat, phrase – the musical equivalent of a sentence – and the pitch of the sounds, so the program could be used to provide backing music for a program of your own.

```
>L.
   10REM * MUZIK * (C) PHILSOFT 1986
   20IF INKEY-256<>0 AND INKEY-256<>-1 THEN
 el%=1 ELSE el%=0
   30PROCsetup
   40REPEAT
   50PROCdur
   60PROCpitch
   70IF ch% THEN PROCchord ELSE SOUND 1,-15
,P%,D%*tempo%
   80UNTIL INKEY(-17)
   90*FX15,0
  100RUN
  110
  120DEFPROCpitch
  130REPEAT:I%=RND(3)-RND(3):UNTIL I%<>0
  140IF Z%+I%<1 OR Z%+I%>LEN s$ THEN I%=-I%
  150Z%=Z%+I%
  160P%=ASC(MID$(s$,Z%,1))
  170ENDPROC
  180
  190DEFPROCdur
  200ch%=0
  210IF d$="" THEN d$=note$(RND(4)):ch%=1:p
h%=ph%+1
  220IF ph%=pl% THEN d$=note$(RND(2)+3):ph%
=0
  230IF el% THEN ch%=0
  240D%=VAL LEFT$(d$,1)
  250d$=RIGHT$(d$,LEN d$-1)
  260ENDPROC
  270
  280DEFPROCsetup
  290DIM note$(5)
  300d$="":s$="":ch1$="":ch2$=""
  310CLS
  320PRINT:PRINT"Press Q to stop":PRINT
  330*FX15,0
  340 INPUT"1-Scottish  2-Modal  3-Eastern
",X
  350IF X>0 AND X<4 THEN PROCscale(X) ELSE3
40
  360INPUT"Enter 3 for 3/4, 4 for 4/4      "
,X
  370IF X=3 THEN RESTORE 400 ELSE RESTORE 3
90
  380FOR J%=1TO5:READ note$(J%):NEXT
  390DATA 1111,211^22,31,4
  400 DATA 21,111,21,3,3
  410INPUT"Please enter a tempo             "
,tempo%
  420INPUT"Please enter phrase length       "
,pl%
  430Z%=RND(LEN s$):ph%=0
  440ENDPROC
  450
  460DEFPROCscale(X)
  470IF X=1 THEN RESTORE 540 ELSE IF X=2 TH
EN RESTORE 550 ELSE RESTORE 560
  480READ N:FOR J=1 TO N
  490READ sc%,ch1%,ch2%
  500s$=s$+CHR$sc%
  510ch1$=ch1$+CHR$ch1%
  520ch2$=ch2$+CHR$ch2%
  530NEXT
  540DATA11,32,20,4,40,24,4,52,32,20,60,48,
32,68,52,32,80,60,48,88,72,52,100,80,68,108
,96,80,116,100,80,128,108,96
  550DATA13,40,20,4,48,32,20,52,32,20,60,40
,24,68,52,32,72,60,40,80,68,48,88,68,52,96,
80,68,100,80,68,108,88,72,116,100,88,120,10
8,88
  560DATA15,32,12,0,36,16,0,48,32,12,52,32,
16,60,48,32,64,52,32,76,60,52,80,60,48,84,6
4,48,96,80,60,100,80,64,108,96,80,112,100,8
0,124,108,100,128,108,96
  570ENDPROC
  580
  590DEFPROCchord
  600ch1%=ASC MID$(ch1$,Z%,1)
  610ch2%=ASC MID$(ch2$,Z%,1)
  620SOUND&0201,-15,P%,D%*tempo%
  630SOUND&0202,-10,ch1%,D%*tempo%
  640SOUND&0203,-10,ch2%,D%*tempo%
  650ENDPROC
```

ENLARGER

◆ *Spectrum* ● *W. Cowan*

This short and simple Basic program will enlarge any string of up to 10 characters and print them anywhere on the screen. Line 90 determines where the characters will be printed, while varying the values of v and h in line 110 will change the width and height of the finished enlargement.

This utility could be used as a sub-routine in any program to enlarge names or titles during loading screens or in the instruction text.

```
  10 INK 5
  90 PRINT AT 0,0;"HI!"
  95 REM PRINT AT 0,0;whatever y
ou want as long as it isn't over
 10 letters long
 100 REM h=height and v=width as
sign value wanted to each in LIN
E 110
 110 LET v=3: LET h=3
 120 LET a=127: LET b=10
4000 FOR y=0 TO 7
4010 FOR x=0 TO 79
4020 IF POINT (x,175-y)=0 THEN G
O TO 4080
4030 FOR k=0 TO v-1
4040 FOR j=0 TO h-1
4050 PLOT b+3*x+j,a-3*y+k
4060 NEXT j
4070 NEXT k
4080 NEXT x
4090 NEXT y
```

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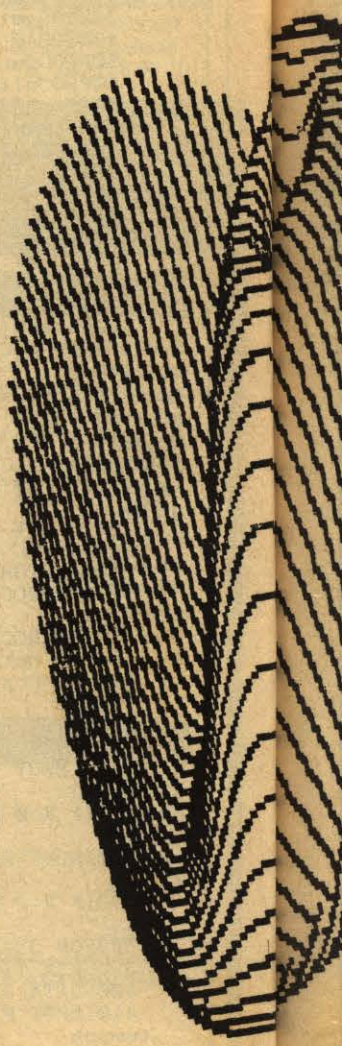
GRAPHICS DUMP

◆ *CBM64 ● N. Wallis*

This useful utility permits graphics to be dumped from the screen to any Commodore printer. It will also work with any other printer which features a single-user definable graphic which the Commodore machines have. Four modes of operation are available – normal width, normal height; normal width, double height; double width, normal height; double width, double height.

```
10 REM ****************
11 REM *GRAPHICS  DUMP*
20 REM *BY NEIL WALLIS*
30 REM *CBM  BASIC  V2*
31 REM ****************
40 POKE53280,0
50 POKE53281,0
60 POKE53283,6
70 PRINT"{WHT}{CLR}"
80 GOSUB370
90 POKE53265,PEEK(53265)OR64
100 PRINT"{CLR}"
110 PRINTSPC(6)"   {RVS} PRINTER DUMP {OFF}
"
120 PRINTSPC(6)"   {RVS} ****MENU**** {OFF}
"
130 POKE53283,2
140 PRINT"{DOWN}{DOWN}{DOWN}{DOWN}"
150 PRINT"{RVS} 1. NORMAL WIDTH - NORMAL HE
IGHT "
160 PRINT"{DOWN}{RVS} 2. NORMAL WIDTH - DOU
BLE HEIGHT "
170 PRINT"{DOWN}{RVS} 3. DOUBLE WIDTH - NOR
MAL HEIGHT "
180 PRINT"{DOWN}{RVS} 4. DOUBLE WIDTH - DOU
BLE HEIGHT "
190 PRINT"{DOWN}{DOWN}{RVS} PLEASE ENTER YO
UR CHOICE  (1-4) "
200 FORI=1TO45:GETA$
210 IFA$="1"ORA$="2"ORA$="3"ORA$="4"THEN270
220 NEXT
230 READA:IFA=-1THENRESTORE:GOTO230
240 POKE53283,A
250 GOTO200
260 DATA6,2,-1
270 PRINT"{CLR}"
280 POKE53283,6
290 PRINT"{RVS} MAKE SURE THE PRINTER IS ON
 THEN 'S' "
300 GETB$:IFB$<>"S"THEN300
310 POKE53265,PEEK(53265)AND191
320 IFA$="1"THENG=19:P=15:GOTO870
330 IFA$="2"THENG=19:P=15:GOTO530
340 IFA$="3"THENG=0:P=14:GOTO870
350 IFA$="4"THENG=0:P=14:GOTO530
360 END
370 PRINTCHR$(14)
380 PRINT"            {SH I}{SH N}{SH S}{SH
T}{SH R}{SH U}{SH C}{SH T}{SH I}{SH O}{SH N
}{SH S}"
390 PRINT"            {C=T}{C=T}{C=T}{C=T}{C
=T}{C=T}{C=T}{C=T}{C=T}{C=T}{C=T}{C=T}"
400 PRINT
410 PRINT"{SH T}HIS PROGRAM IS DESIGNED TO
HELP  YOU TO";
420 PRINT"DUMP GRAPHICS FROM A {SH H}{SH I}
-{SH R}{SH E}{SH S} SCREEN TO  A";
430 PRINT"DOT MATRIX PRINTER.{SH T}HERE ARE
 FOUR  MODES";
440 PRINT"OF PRINT WHICH ALLOW THE  PICTURE
  TO BE";
450 PRINT"EXPANDED IN DIFFERENT WAYS.{SH A}
LTHOUGH THIS";
460 PRINT"PROGRAM GIVES YOU AN  ACCURATE  A
ND WELL";
470 PRINT"PRESENTED HARDCOPY IT IS QUITE SL
OW  AND";
480 PRINT"PREVENTS THE COMPUTER FROM CARRYI
NG  OUT";
490 PRINT"ANY OTHER TASKS."
500 PRINT"{DOWN}{DOWN}   {SH P}{SH R}{SH E}
{SH S}{SH S} {SH A}{SH N}{SH Y}{SH  }{SH K}
{SH E}{SH Y}{SH  }{SH F}{SH O}{SH R}{SH  }{
SH O}{SH P}{SH T}{SH I}{SH O}{SH N}{SH S}{S
H  }{SH P}{SH A}{SH G}{SH E}"
510 GETA$:IFA$=""THEN510
520 RETURN
```



PROGRAM LISTINGS

Before the program can be run, the screen to be dumped should be installed in the computer memory. The program can then be run and the operational mode selected. You will then be prompted for the start address of the screen and, on keying it in, the printer will proceed to print-out the screen. The speed at which that is carried-out will vary according to the model of the printer but will always be reasonably slow.

```
530 CLOSE5
540 PRINT"{CLR}"
550 INPUT"{WHT}ENTER START ADDRESS OF SCREE
N";SA
560 BASE=SA
570 OPEN6,4,6:PRINT#6,CHR$(0)
580 REM**PRINT**
590 FORY=0TO24:FORX=0TO39:BYTE=(BASE+(Y*320
)+(X*8)):GOSUB660:NEXTX:CLOSE5
600 CLOSE6:OPEN6,4,6:PRINT#6,CHR$(10):OPEN4
,4:PRINT#4,CHR$(10):CLOSE4
610 PRINT#6,CHR$(0):CLOSE6
620 FORX=0TO39:BYTE=(BASE+(Y*320)+(X*8)):GO
SUB770:NEXTX:CLOSE5:CLOSE6:OPEN6,4,6
630 PRINT#6,CHR$(10):OPEN4,4:PRINT#4,CHR$(1
0):CLOSE4:PRINT#6,CHR$(0):CLOSE6
640 NEXTY:END
650 REM*****************************
660 OPEN5,4,5:OPEN4,4
670 FORZ=0TO3:IFPEEK(BYTE+Z)<>0THEN690
680 NEXTZ:PRINT#4,CHR$(P)TAB(X+G)" ":CLOSE4
:CLOSE5:RETURN
690 FORC=0TO7:B(C)=0:NEXTC
700 FORT=0TO3:F=PEEK(BYTE+T):FORI=7TO0STEP-
1
710 IFF/2^I>=1THENJ=(2^(7-(2*T))):V=(2^(6-(
2*T))):LETB(I)=B(I)+J+V:F=F-2^I
720 NEXTI:NEXTT
730 FORI=7TO0STEP-1:F$=F$+CHR$(B(I)):NEXTI:
PRINT#5,F$
740 PRINT#4,CHR$(P)TAB(X+G)CHR$(254):F$=""
750 CLOSE5:CLOSE4:RETURN
760 REM*****************************
770 OPEN5,4,5:OPEN4,4
780 FORZ=4TO7:IFPEEK(BYTE+Z)<>0THEN800
790 NEXTZ:PRINT#4,CHR$(P)TAB(X+G)" ":CLOSE4
:CLOSE5:RETURN
800 FORC=0TO7:B(C)=0:NEXTC
810 FORT=0TO3:F=PEEK(BYTE+T+4):FORI=7TO0STE
P-1
820 IFF/2^I>=1THENJ=(2^(7-(2*T))):V=(2^(6-(

2*T))):LETB(I)=B(I)+J+V:F=F-2^I
830 NEXTI:NEXTT
840 FORI=7TO0STEP-1:F$=F$+CHR$(B(I)):NEXTI:
PRINT#5,F$
850 PRINT#4,CHR$(P)TAB(X+G)CHR$(254):F$=""
860 CLOSE5:CLOSE4:RETURN
870 CLOSE5
880 PRINT"{CLR}"
890 INPUT"{WHT}ENTER START ADDRESS OF SCREE
N";SA
900 BASE=SA
910 OPEN6,4,6:PRINT#6,CHR$(0)
920 REM**PRINT**
930 FORY=0TO24:FORX=0TO39:BYTE=(BASE+(Y*320
)+(X*8)):GOSUB970:NEXTX:CLOSE5
940 CLOSE6:OPEN6,4,6:PRINT#6,CHR$(10):OPEN4
,4:PRINT#4,CHR$(10):CLOSE4
950 PRINT#6,CHR$(0):CLOSE6:NEXTY:END
960 REM*****************************
970 OPEN5,4,5:OPEN4,4
980 FORZ=0TO7:IFPEEK(BYTE+Z)<>0THEN1000
990 NEXTZ:PRINT#4,CHR$(P)TAB(X+G)" ":CLOSE4
:CLOSE5:RETURN
1000 FORC=0TO7:B(C)=0:NEXTC
1010 FORT=0TO7:F=PEEK(BYTE+T):FORI=7TO0STEP
-1
1020 IFF/2^I>=1THENB(I)=B(I)+(2^(7-T)):F=F-
2^I
1030 NEXTI:NEXTT
1040 FORI=7TO0STEP-1:F$=F$+CHR$(B(I)):NEXTI
:PRINT#5,F$
1050 PRINT#4,CHR$(P)TAB(X+G)CHR$(254):F$=""
1060 CLOSE5:CLOSE4:RETURN

READY.
```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CONTMUSIC

◆ *Spectrum ● F. David*

Contmusic will assist any programmer to add continuous music or sound effects to either Basic or machine code programs. It is completely relocatable and requires only 189 bytes, including the sounds or music produced.

When the program is run, a menu is displayed which provides the option to compile a tune, listen to it, change the tempo or save the melody. It is also possible to play several melodies at the same time. To do that the melodies must be compiled to different addresses. The routines can then be called back with LET I=USR adr where adr is the location address of the tune. As with all programs, there are certain limits – the maximum number of notes which can be compiled at one time is 17.

Within a BEEP statement, the duration and pitch limits are 0.01-5.0 and 0-40 respectively.

It is important to remember that when a sound routine is called into operation, there will be a delay of 0.01 seconds while the computer assembles the machine code. The printed listing will save programs to Microdrive; to convert to tape the appropriate code must be inserted in line 5005.

```
   1 REM Examples.Delete the REM
-statement in front of the DATA-
statement
   2 DATA .01,0,.01,2,.01,4,.01,
6,.01,8,.01,10,.01,12,.01,14,.01
,16,.01,14,.01,12,.01,10,.01,8,.
01,6,.01,4,.01,2,.01,0,-1
   3 REM DATA .08,0,.07,40,.06,1
,.05,39,.04,2,.03,38,.02,3,.01,3
7,.02,4,.03,36,.04,5,.05,35,.06,
6,.07,34,.08,7,.09,33,.09,33,-1
   4 REM DATA .1,7,.1,7,.1,5,.1,
3,.2,2,.1,2,.1,2,.2,5,.1,3,.1,2,
.2,0,.1,0,.1,0,.2,3,.1,2,.1,0,.3
,0,-1
  25 LET sp=1: DIM f(42): DIM d(
14): DIM a(14): DIM m(34)
  27 GO SUB 3000: GO TO 70
  30 LET ind=1
  40 LET adr=adr+8: GO SUB 900:
LET adr=adr-8: GO SUB 900: LET a
dr=adr+2: GO SUB 900: GO SUB 900
: LET adr=adr+4: GO SUB 900: GO
SUB 900: LET adr=adr-4: GO SUB 9
00
  45 LET adr=adr+2: GO SUB 900:
LET adr=adr+4: GO SUB 900: LET a
dr=adr-8: GO SUB 900: GO SUB 900
: GO SUB 900: LET adr=adr+111: G
O SUB 900: GO SUB 900
  46 LET ind=1
  50 LET adr=adr2: GO SUB 910: L
ET adr=adr+112: GO SUB 910: LET
adr=adr+6: GO SUB 910: LET adr=a
dr+9: GO SUB 910: LET adr=adr+7:
 GO SUB 910: LET adr=adr+8: GO S
UB 910: LET adr=adr+7: GO SUB 91
0:
  55 LET adr=adr+3: GO SUB 910:
LET adr=adr+10: GO SUB 910: LET
adr=adr+3: GO SUB 910: LET adr=a
dr+9: GO SUB 910: LET adr=adr+7:
 GO SUB 910: LET adr=adr-13: GO
SUB 910: LET adr=adr+16: GO SUB
910
  60 LET ind=1: FOR f=1 TO 14: G
O SUB 950: POKE a(f),ldata: POKE
 a(f)+1,hdata: NEXT f
  75 CLS : PRINT "CHANGE SPEED--
------C": PRINT "GET OUT OF PROG
RAM--0": PRINT "SAVE THE TUNE---
-----S": PRINT "LISTEN TO THE TUN
E--L": PRINT "COMPILE----------
--K"
  80 INPUT W$
  82 IF W$="C" OR W$="c" THEN GO
 TO 7000
  85 IF W$="0" THEN LIST
  90 IF W$="S" OR W$="s" THEN GO
 TO 5000
  92 IF W$="L" OR W$="l" THEN LE
T in=adr2+8: LET h=INT (in/256):
 LET l=in-h*256: POKE adr2,l: PO
KE adr2+1,h: PRINT AT 20,5; FLAS
H 1;"Press any key for menu": PO
KE (adr2+124),sp: GO TO 6000
  94 IF W$="K" OR W$="k" THEN IN
PUT "Adress?";adr: PRINT AT 10,1
0;"PLEASE WAIT": LET adr2=adr: G
O SUB 1000: GO SUB 2000: POKE (a
dr2+124),sp: GO TO 30
  95 GO TO 80
 900 LET d(ind)=adr: LET ind=ind
+1: RETURN
 910 LET a(ind)=adr: LET ind=ind
+1: RETURN
 950 LET hdata=INT (d(ind)/256):
 LET ldata=INT (d(ind)-hdata*256
): LET ind=ind+1: RETURN
1000 RESTORE 8900: FOR f=(adr+10
6) TO (adr+188): READ x: POKE f,
x: NEXT f: RETURN
2000 LET koadr=(adr2+8)
2010 RESTORE 1: FOR f=1 TO 34 ST
EP 2: READ len,dur
2020 IF len=-1 THEN FOR h=koadr
TO (adr2+110): POKE h,0: NEXT h:
 RETURN
2030 LET m(f)=len: LET m(f+1)=du
r
2040 LET dur=dur+1: LET de=f(dur
)*.01: LET hl=437500/f(dur)-30.1
25: LET antal=(len/.01)/2
2050 LET highde=INT (de/256): LE
T lowde=(de-highde*256): LET hig
hhl=INT (hl/256): LET lowhl=(hl-
highhl*256)
2060 POKE koadr,lowde: POKE koad
r+1,highde: POKE koadr+2,lowhl:
POKE koadr+3,highhl: POKE koadr+
4,antal: LET koadr=koadr+6
2090 NEXT f
3000 RESTORE 9002: FOR g=1 TO 41
: READ x: LET f(g)=x: NEXT g: RE
TURN
5005 INPUT "SAVENAME?";N$: SAVE
*"M";1;N$CODE adr2,189: PRINT "S
aved the rutin from";adr2;" to "
;adr2+189: PRINT "Load it to adr
=";adr2: PRINT "To call the rout
ine use:LET I=USR ";adr2+123: PR
INT "Press any key": PAUSE 0: GO
 TO 70
6000 FOR F=0 TO 30: PRINT AT 10,
F;" *": LET i=USR (adr2+123): NE
XT F: IF INKEY$<>"" THEN GO TO 7
0
6005 GO TO 6000
7005 PRINT "CURRENT SPEED IS:";s
p: INPUT "New speed?(1-255)";sp:
 BEEP .1,0: GO TO 70
8901 DATA 0,0,0,0,0,42,184,136,1
,6,0,17,186,136,237,176,201,6,1,
197,58,186,136,254,0,40,28,58,19
0,136,254,0,40,33,61,50,190,136,
221,126,2,237,91,186,136,42,188,
136,205,181,3,193,16,221,201,33,
192,136,34,184,136,205,39,137,19
3,24,208,42;184,136,1,6,0,9,34,1
84,136,205,39,137,193,24,192
9002 DATA 261.63,277.18,293.66,3
11.13,329.63,349.23,369.99,392,4
15.3,440,466.16,493.88,523.25,55
4.37,587.33,622.25,659.26,698.46
,739.99,783.99,830.61,880,932.33
,987.77,1046.5,1108.73,1174.66,1
244.51,1318.51,1396.91,1479.98,1
567.98,1661.22,1760,1864.66,1975
.53
9003 DATA 2093,2217.46,2349.32,2
489.02,2637.02
```

PROGRAM FORMATTER

◆ *Amstrad* ● *D. Miles*

It is often necessary to highlight sections of programs by introducing REM statements so that their function can be understood more easily later. There are not, however, many other procedures which can be carried-out in Basic to produce a well-formatted program listing. This program causes the program to be printed with all the REM statements in bold print, FOR-NEXT loops indented, and all variables in italics. To ensure that the program works correctly, two rules must be obeyed:

All quotation marks which have been opened within PRINT statements are closed.

All variables must be in lower-case.

To print-out a program in the formatted form, it must first be saved as an ASCII file. That is achieved by typing: ' SAVE " filename ",a '). The program formatter can then be run and the on-screen prompts followed.

The program should work with all Epson-compatible printers but, if it does not, changing the control codes should prove successful.

```
10 REM ** PROGRAM LISTING FORMATTER **
20 REM **       By Duncan Miles      **
30 REM
40 REM * Set up Machine Code *
50 FOR i=&A4F6 TO &A4FC
60 READ a$
70 POKE i,VAL("&"+a$)
80 NEXT i
90 DATA CD,80,BC,32,05,A5,C9
100 REM * Print Program *
110 MODE 1
120 INPUT "Please enter <filename> of progr
am to   print ";file$
130 PRINT#8,CHR$(27);"@";CHR$(10);CHR$(10);
140 WIDTH 255
150 OPENIN file$
160 IF NOT(EOF) THEN CALL 42230 ELSE 360
170 a$=CHR$(PEEK(42245))
180 IF a$<>CHR$(13) THEN l$=l$+a$ ELSE l$=l
$+CHR$(13):GOTO 200
190 GOTO 160
200 FOR w=1 TO LEN(l$)
210 IF MID$(l$,w,1)=CHR$(13) THEN p=0:p2=0:
PRINT #8,CHR$(27);"F";CHR$(13);
220 IF MID$(l$,w,1)=CHR$(34) THEN p3=p3+1
230 IF p3=2 THEN p3=0
240 IF MID$(l$,w,1)=" " AND MID$(l$,w+1,4)=
"NEXT" AND p1=0 AND p2=0 AND p3=0 THEN w=w+
4:p=1:p1=1:indent=indent-3:FOR l=1 TO inden
t:PRINT#8," ";:NEXT l:PRINT#8," NEXT";:IF i
ndent<=0 THEN indent=0
250 IF MID$(l$,w,1)=":" AND MID$(l$,w+1,4)=
"NEXT" AND p1=0 AND p2=0 AND p3=0 THEN w=w+
4:p1=1:PRINT#8,":NEXT";:indent=indent-3:IF
indent<=0 THEN indent=0
260 IF p=0 AND MID$(l$,w,1)=" " THEN p=1:FO
R l=1 TO indent:PRINT#8," ";:NEXT
270 IF MID$(l$,w,3)="REM" AND p1=0 AND p2=0
 AND p3=0 THEN w=w+2:p1=1:p2=1:PRINT#8,"REM
";CHR$(27);"E";
280 IF MID$(l$,w,3)="FOR" AND p1=0 AND p2=0
 AND p3=0 THEN indent=indent+3:w=w+2:p1=1:P
RINT#8,"FOR";
290 IF p1=0 AND p2=0 AND p3=0 THEN IF NOT(M
ID$(l$,w,1)>CHR$(96) AND MID$(l$,w,1)<CHR$(
123)) THEN PRINT#8,CHR$(27);"5";
300 IF p1=0 AND p2=0 AND p3=0 THEN IF MID$(
l$,w,1)>CHR$(96) AND MID$(l$,w,1)<CHR$(123)
 THEN PRINT#8,CHR$(27);"4";
310 IF p1=0 THEN PRINT#8,MID$(l$,w,1);
320 p1=0
330 NEXT w
340 l$=""   350 GOTO 160
360 CLOSEIN:PRINT#8,CHR$(27);"@";CHR$(10);C
HR$(10);
```


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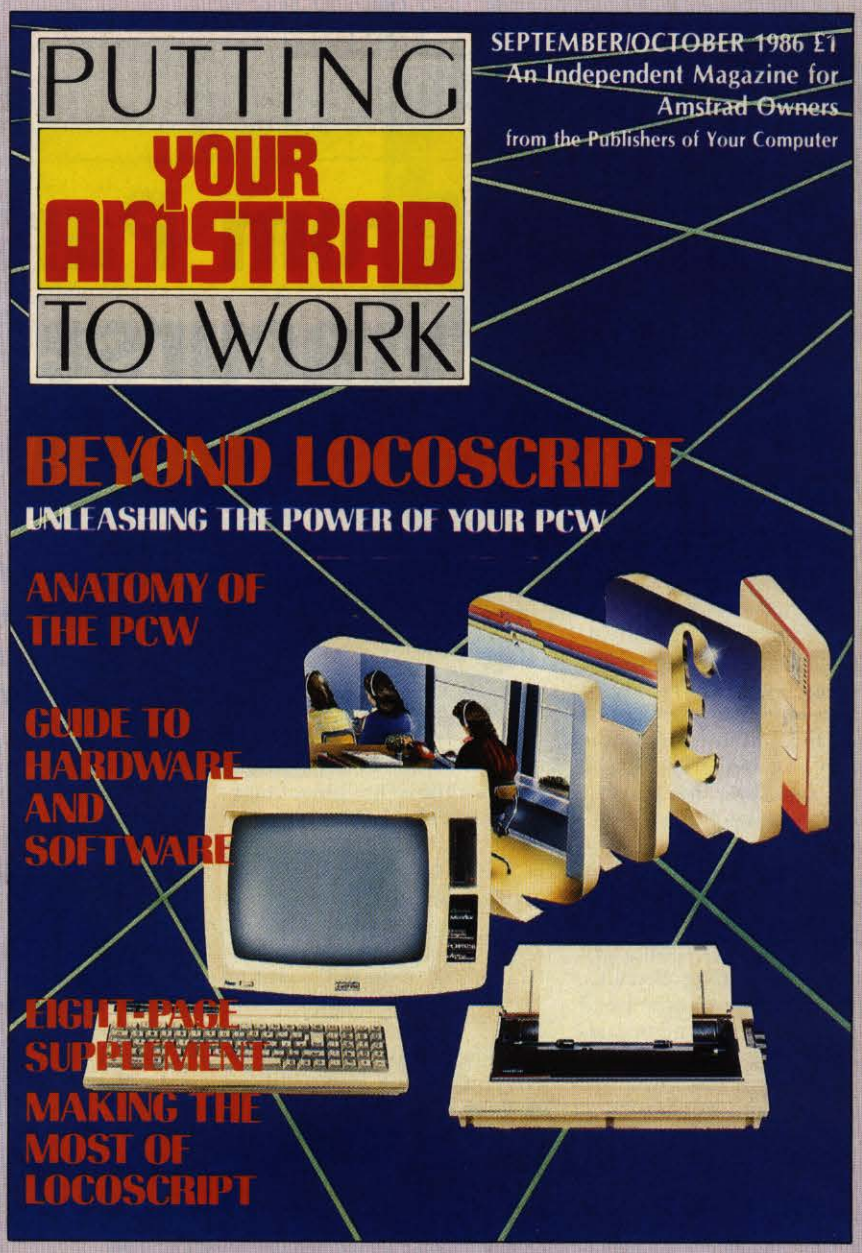

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HEWSON

From Paradroid to Pyracurse – Hewson grows up

This Didcot-based company has changed a great deal since the release of* Gribbly's Day Out. *Lee Paddon went to see what changed the company from just another software house into a market leader.

If you were to ask anyone involved with computer software the most innovative company, the chances are the answer would be "Hewson". The company has an awesome record for new ideas, fresh concepts and just plain expertise in an industry beset by imitators and formula followers.

Conceived in 1980 in Andrew Hewson's back bedroom, the company has expanded to a modest size and now resides in its lair, deep in the heart of the warren-like trading estate near Didcot. Despite the expansion, the steadying hand on the tiller is still that of Hewson. At a time when the minnows of the industry are being swallowed by the big fish, the maveric Hewson remains fiercely independent.

It all started with his book *Hints and Tips for the ZX-80*. He was one of many people to recognise the potential of Uncle Clive's "Dog Biscuit". "It was unlike any computer I had used. There was no operating system between you and the processor; it was so immediate, you could get at everything," he says.

After the success of that book, a sequel on the ZX-81 followed. Then followed the launch of the Spectrum and a momentous step for Hewson. The business moved from the back bedroom and he bought £30,000 worth of tape duplication equipment. "Although it was a risk and it needed six months to get it working, it gave us stability. I could work it and it meant we were independent. We could promise delivery times and keep to them."

Although Hewson has always considered being able to program and understand the technicalities an advantage, soon after that he began to take a back seat in writing games as he gathered a formidable and highly-talented team round him. Steve Turner wrote *Dragontorc* and Andrew Braybrook started writing games on the Dragon.

"We obviously made a mistake keeping Braybrook on the Dragon as long as we did but *Avalon* was important, as it gave us a reputation for being innovative and radical."

Soon after that Braybrook turned his attention to the Commodore. First he wrote *Gribley's Day Out*, and then *Paradroid*, the game which brought both Braybrook and Hewson much wider recognition. Next followed *Uridium*, one of the most successful Commodore games, and certainly one of the most highly-praised by programmers, pundits and public. *Quazatron* on the Spectrum was based on Paradroid and written by Braybrook's partner in crime, Turner. *Pyracurse* is Hewson's latest release and continues the innovative ideal. "I consider it a big technical leap forward," says Hewson. "We wanted to show you could design a challenging arcade adventure which was not room-based. The program has to determine what all the objects on that level are doing." Despite his back seat in programming, Braybrook still dabbles in game design. "I wanted the game to have a kind of cartoon theme. The inspiration came from television. Programs like *Scrooby Doo* and *Wacky Races* – the character Daphne is taken from Penelope Pitstop. The idea of the tomb came from the old Godzilla movies. It also gives you plenty of walls, treasures and monsters to play with."

Reading signs.

AlleyKat – ready to go.

Leaving base.

City Slicker

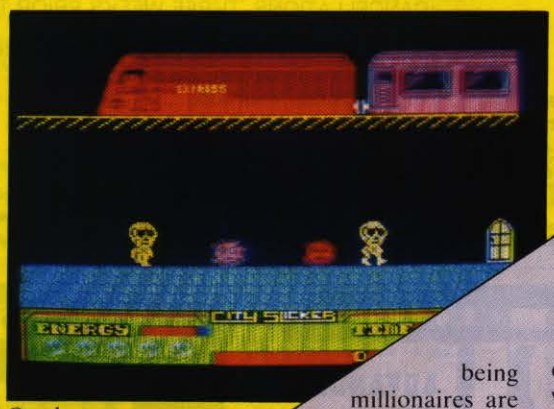
The next game, due in September, is *City Slicker*. That is

from Steve Marsden and David Cook, who wrote *Technician Ted* for Hewson. The game is set in London and trouble is afoot in the shape of Abru Kadabra who has planted a bomb beneath the Houses of Parliament. Instead of calling in the bomb squad, you decide to have a go. In the course of assembling your bomb disposal kit and locating the bomb, you meet various people, including Maggie and The Queen. In all those confrontations it is essential to get the characters' co-operation, so understanding their personality is essential.

Firelord stops to survey the scene.

By the end of September, Braybrook hopes to have *Alley Cat* finished. It promises to be his best yet. It builds on the ideas in Uridium but is far more than a sequel. The setting is a huge wheel stadium in space which you must race round. Control will be like Uridium, but without reverse, and with variable height. You have to race and shoot your way round three laps of the wheel. If you do well enough, you go on to the next arena; if you do very well, you skip several levels. The graphics are more pastoral and will include bridges and tunnels.

Height in general will be very important, with all the sprites having shadows. Braybrook claims that no-one will feel they are getting another version of Uridium – "I've put so much more into this game; there are more complex movement patterns for the meanies. The course is randomised. That means I can put in as many levels as I like. I settled for 32, otherwise they would all start to look the same. Scrolling is top to bottom. There is no on-screen information. I have always felt it was a waste of time – after all, you do not have time to look at it and it takes processor time. There will also be a big meanie called a Catakiller with four cannon. It moves like a caterpillar and is out to kill cats.



On the run.

Enjoyable

"I have always enjoyed working with Hewson. Turner and I work as a team, criticising each other's work and trying ideas on one another. I suppose I have thought of branching-out on my own but since I spend all my time programming, I would still need someone running the business side of things and probably finish no better off.

"Hewson is a good name to have behind you; people always sit up and take notice when one of our games appears. The days of authors being millionaires are past; I need to keep writing and you have to produce something every six months or people forget who you are. The trouble is it is more difficult every time to do something new. I have really got as much out of the Commodore as is possible. Perhaps after another two Commodore games, I will be able to move on to an Amiga or an ST."

More colour

Turner, after the success of Quazatron, is already hard at work on a new game, as yet with no title. "It will be a follow-up to Quazatron but without the 3D; it will be more like Paradroid with a series of rooms on-screen simultaneously but no scrolling. You control a wizard, and you have to move round collecting spells and zapping meanies. The idea is to hunt wizards and then use the spells to destroy them. It is a little like the coin-op game *Gauntlet* but with more plot. The map starts blank and is filled-in as you move about.

When you are using compaction techniques on a Spectrum, it is virtually impossible to get scrolling, as you cannot put the graphics in a buffer the way you can on a Commodore.

"It is very much a case of the machine dictating the game these days. I think I have found a way to get more colour in a complex screen. I shall put colour in the 'hard' sprites and just shadow on the background. That makes it look better than the two-colour games of which there are more and more these days.

City Slicker – dashing around.

"Although there is a magical element in this game, I do not want to go back to the Avalon days. I built a cult following with those games but if you want to go for the big market, you have to make the games highly playable and give them a strong arcade flavour. It should be out around January and we have someone lined up to convert it for the Commodore."

Before that, in October, Hewson's latest recruit, Steve Crow, who received widespread acclaim for his game *Starquake*, has a game called *Firelord* well on the way to completion. It is an arcade adventure set in a medieval environment.

Slick and slippery

The aim is to become the Firelord by a combination of magic and fighting. The graphics are slick and slippery and the backdrop is based on an old Kentish village full of half-timbered houses like many around Crow's hometown of Tunbridge Wells. By using the building block or token approach, he has managed to cram into the game a huge number of screens.

Towards Christmas, Hewson should have a conversion of Uridium for the Spectrum.

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DIARY

This is our new diary page. If you know of any events or exhibitions linked to computing in your area, please write to us.

BRITISH MUSIC FAIR
August 1-3, 1986.

A hands-on demonstration of the use of computers in music is being staged at the British Music Fair at London's Olympia. A series of half-hour shows by professional demonstrators will run throughout each day with the chance for the public to try the software and hardware.

More than 10 leading software packages will be demonstrated. For the educational market there are programs introducing the basics of making music for children, while for the musician the different types of sound sampling, recording and editing will be demonstrated. The packages will be available for all the major makes of personal computer, including Amstrad, Commodore and Spectrum.

8th OFFICIAL COMMODORE COMPUTER SHOW
September 12-14, 1986.

Yet another Commodore show is due to be held at the University of Manchester Institute of Science and Technology. More than 15,000 are expected to attend the show, which will have more than over 75 stands with displays and demonstrations of all the latest hardware, software and peripherals for the Commodore range of computers.

The British Computer Society

Founded in 1957, is concerned with the advancement of knowledge about computing. The 42 branches throughout the country hold meetings on a regular basis. Details of forthcoming events can be obtained from the BCS on 01-637 0471.

NEXT MONTH

Special Features

EIGHT-PAGE PCW SHOW GUIDE

August tends to be rather dull in terms of activity in the computer industry. The reason is that many companies are working behind the scenes, busily preparing for the PCW show in early September.

This annual highlight of the computing year is when manufacturers show to the press and public the new hardware and software which will soon be available.

This year *Your Computer* will be contacting those companies which have indicated that they will be exhibiting at the show and talking to them about their new products. From that information we shall compile an extensive guide to the event.

If you are planning to visit the PCW show, make sure you read *Your Computer* first and you will know what exciting new products to look for.

GRAPHICALLY SPEAKING

We review a new graphics tablet for the Amstrad CPC computers. Graphics tablets make the creation of sophisticated computer images a straightforward task. This product combines a well-engineered tablet with software to exploit the full potential of the peripheral.

COMPUTER COURSE INDEX

This issue includes the final part of the *Your Computer* course. In the September issue we will publish an index to the course, plus details of how you may obtain any instalments you may have missed.

NEWS ● REVIEWS ● HINTS & TIPS ● CLUBS ● SOFTWARE GUIDES

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Your COMPUTER COURSE

AUGUST 1986

A COMPREHENSIVE GUIDE TO PROGRAMMING – PART 6

FINAL PART

ARE YOU A COMPUTER MASTERMIND?
FIND OUT WITH OUR COMPUTER GAME

A COMPUTER EXCUSE ME
USING INTERRUPTS EFFECTIVELY

WHERE TO GO FROM HERE
OUR GUIDE TO FURTHER READING

AND SO TO Z
. . . CONCLUDING OUR GUIDE TO COMPUTER JARGON

In common with educational institutions throughout the country, the *Your Computer* Course is having a break for the summer. Unlike other courses, there is no examination at the end of our introduction to the techniques of programming your microcomputer. We hope, though, that you will take the opportunity to build on the knowledge gained during the last few months, honing your programming skills by developing your own software. To help you find additional sources of information, we have included in this final part of the course a guide to additional reading in which we list some advanced texts on programming techniques for the leading computers.

Also included in this month's concluding instalment of the course is the final part of John Lettice's glossary, in which he reveals which computer jargon terms begin with the letter Z.

In addition, we assess the Fortran language and list a simple game based on the *Mastermind* game so popular in the late 1970s.

In conclusion, we hope that you have enjoyed the course and learned from it. Do not rest on your laurels. Continue to practise your programming skills during the summer months and watch for an advanced *Your Computer* programming guide in the future.

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Contributors:

John Lettice

Geof Wheelwright

David Janna

Making the most of your computer

It is often possible to save a good deal of time when programming by allowing the computer's hardware to do some of the work for you. Yet many people still fail to make use of all a computer's powers when solving their problems. Alexander Graham shows that there is more than one way to skin a cat.

There is the tale of the mechanical engineer, physicist and theoretical mathematician who are stranded in the middle of an arid plain with only a can of tinned fruit for refreshment. Their problem is that none of them has a can opener and each is asked to devise a solution to their plight.

The physicist calculates that, using the lens of his spectacles, he could focus the energy of the rays of the sun into a beam which would cut through the metal of the can and thus gain access to the fruit. The mechanical engineer, in turn, demonstrates, with a crude diagram, that by making use of available materials he could construct a primitive can opener with a sharpened rock as its cutting edge.

Those two worthies then turn to the theoretical mathematician to hear his solution. After a few moments of contemplation, he leans back and states that they should assume the tin is open and eat the contents.

That tale, aside from poking fun at the idealistic view of certain members of academic circles, is designed to show that for any given problem there are a number of solutions. Some of them will be of equal value, while others will be of little practical use. If at this stage you are wondering what it has to do with programming your home computer, remember that programming concerns the development of software to achieve a certain specified goal – in other words to solve a problem.

The programmer has at his disposal a variety of tools, not least of which is the environment offered by the operating system of the computer and the facilities provided by the programming language in use. Many programmers, though, fail to make use of another important aid to their work, the hardware of the computer on which they are working.

If a program is concerned solely with the manipulation of data input via the keyboard, with the results of the computation being displayed as text-based output on-screen, it is not likely that they will need to use any special facilities offered by the hardware of a system. Few programs are as limited in their function as that, since there is often a requirement to present data in a graphical form and, when programming games, to generate a sound output.

To produce graphics and sound, a programmer has a choice between accessing particular areas of a computer directly to achieve the desired result or making use of various facilities which may be built into the hardware of the system to achieve a similar result. In the former case, the programmer can often realise a greater control over the performance of the system.

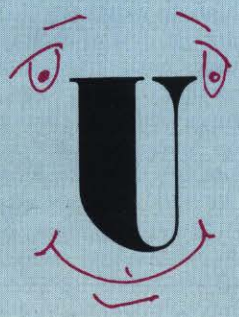
The penalty to be paid is in the programming effort to achieve the desired result. In the latter case, while the programmer may be more restricted in the control which can be exercised over the system, the programming effort will be much reduced, the designers of the system having taken some of the burden of system control off the shoulders of the programmer.

Although at times it may be hard to believe, computer manufacturers often design their machines with special facilities built in to assist programmers in achieving their goals.

To sum up, programmers should not be blinded by the joys of 'pure' programming but should remember that in many cases permitting the hardware do some of the hard work will make their lives far easier. It is a little like asking why if you have bought a dog you should do the barking. If your computer has a video control chip which can handle screen output adequately in a particular application, why re-invent the wheel by writing your own screen-driver? The question may seem trivial but it is surprising how many programmers do that; you will be a far more efficient programmer if you avoid such temptation.

Your COMPUTER COURSE

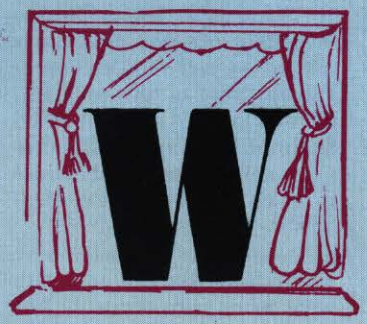
■ **Table:** A method of storing data items in memory. See **array**.
■ **Temporary storage:** Memory locations used for short-term storage of partially-completed calculations.
■ **Terminal:** Device used by the programmer to access a large computer. Terminals, like programmers, can be dumb or smart.
■ **Text editor:** The simplest, cheapest and sometimes most effective form of word processor.
■ **Toggle:** A key used as a simple switch to enable and then disable a feature of a program.
■ **Top-down programming:** Snob programming involving getting the overall concept correct and then writing subroutines to do the bits into which you have broken it down.
■ **TOS:** Operating system on the Atari ST. Atari now denies that it stands for Tramiel Operating System but we know different.
■ **Tramiel:** Almost as famous as Sir Clive Sinclair.



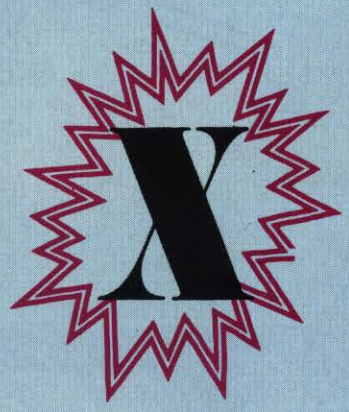
■ **Unix:** Language which is always on the point of making it but never does.

■ **Upload:** To transfer data into a computer.
■ **User-friendly:** Term used to describe a system which pretends to be easy to use until you become careless.
■ **Utility:** A program which is useful. Uncommon.

■ **Validation:** A test of the value of a data item.
■ **Variable:** A name assigned to a value which can change as the program runs.
■ **Vector:** A pointer to an address.
■ **Verify:** To test a transmitted or saved piece of datas for error.
■ **Virtual memory:** RAM expansion card undergoing design. Alternatively, programs written to work with machines with varying amounts of RAM will often use disc accesses as virtual memory to compensate for any deficiency.



■ **Wait state:** The pause most processors are compelled to take to wait for the slower memory to catch-up.
■ **Winchester:** A fixed, sealed disc unit of large capacity.
■ **Window:** An area of program or screen which can be viewed and manipulated independently.
■ **Word-wrap:** Facility in word processor which avoids words breaking across lines.



■ **X-Men:** A few comapnies, such as X-Data and Xcell, begin with X because there is not much else happening in this part of the alphabet. As they are not sufficiently important to mention here, we will have an irrelevant entry from Marvel Comics instead.

■ **Y:** Probably the least-used letter in computer programs and also short for Yes in many adventure games.
■ **Y-axis:** The horizontal part of a graph, at a right angle to the x-axis.

■ **Zero:** Like X, there is nothing much happening under Z.
■ **Zero wait state:** Because of differences between the speed at which RAM operates and the speed of the computer clock, execution of a program often has to wait while the RAM catches-up. Zero wait state memory therefore speeds execution by avoiding this.
■ **Zilog:** Manufacturer of the Z-80 processor, which would now be defunct were it not for Amstrad.

Finding the language for your needs

Fortran is not a language normally associated with microcomputers, yet versions of it are available for machines as diverse as the BBC micro, the Sinclair QL and the Atari ST. The main reason for the healthy number of home micro editions of Fortran is that it remains a popular teaching language at colleges, universities and polytechnics, where they use the kind of mainframe and minicomputer hardware best-suited to Fortran programming.

As users in some parts of the U.K. are still required to use punch cards, line printers and old mainframe systems to develop and edit Fortran, the ability to use screen, cursor keys and your micro to run a Fortran program must be a big attraction.

The question is how do you want the language to be used on your computer?

In terms of the way the language works, Fortran is a structured programming language similar in some respects to Basic. Instead of GOSUBs or procedures, however, the Fortran programmer uses what are known as a series of Do loops to accomplish the job.

Again, as in Basic, the Do loops contain all the instructions needed to carry-out each constituent part of the program. Those Do loops are then called from the beginning of the program and executed in the order in which you want them carried-out.

As computer standards have evolved, so has Fortran, with what many consider to be the penultimate version of the language being defined in 1977 as Fortran 77 – an unimaginative designation only a federation group like programmers could be relied on to conceive. Thus it is a good idea, if you are looking for a micro version of the language, to make sure that it conforms to the standard.

The alternative, of course, is to ensure that the version is at least a good superset of the standard Fortran. In too many instances, programmers become so enthusiastic about improving a standard implementation of the language that may make it entirely non-standard. It is not a problem, for example, if an edition of Fortran adds non-standard colour and sound commands which permit access to specific features of your micro, so long as they do not omit standard Fortran commands for printing information to the screen, getting it from the keyboard or handling any other machine-specific input/output.

By now you will have had a fair taste of the wide variety of languages available for most makes of micro but you also may well not be sure as to the way in which you choose the proper language for your needs. As with most things, the type of language you need depends a great deal on the type of job you want to do.

For most jobs, the Basic which is almost certain to have been included with your machine will be more than adequate but Basic has its limitations. It is often difficult, for example, to move Basic programs from one machine to another.

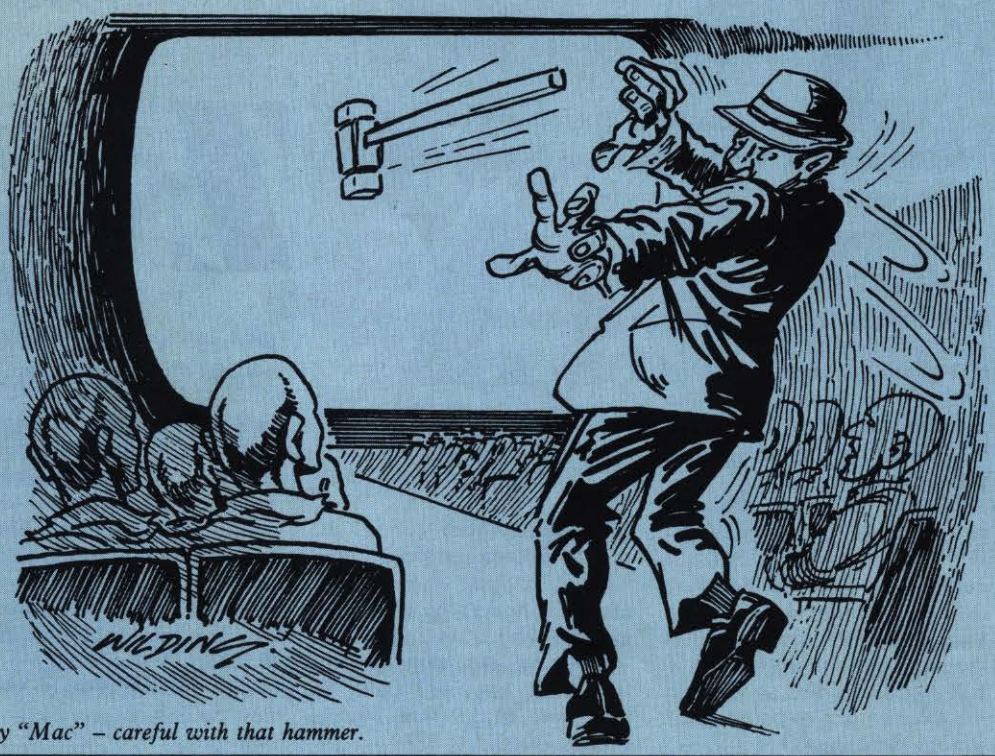
While one machine may offer procedures in its Basic, another will use GOSUBs. On the BBC micro you can define music with the sound and envelope commands, while it takes a series of pokes to do the same thing on the Commodore 64. In short, Basic is not necessarily a portable language. You would do better to look at something like C or Pascal if you require portability.

Fortran, the long-established language, is now seeing the light on some of the larger home computers.

If speed is a concern, you should consider something along the lines of Forth, written to the Forth Interest Group standard. Versions are available for most popular makes of machine and the source code should be obtainable from Forth Interest Groups if you want to do your own conversion.

You also need to address the question of how you want the language to be used on your machine. In most cases there is not a great deal of choice; the languages must be loaded from tape or disc and fit in RAM. On machines such as the BBC micro, Sinclair QL and Commodore 64, cartridge software can be used, eliminating the need to use valuable RAM space.

Cartridge-based programming languages are not, of course, modified as easily as those in RAM but they tend to operate faster and provide a great deal more workspace than RAM-based offerings.



Hey "Mac" – careful with that hammer.

Mastermind on the BBC

Geof Wheelwright looks at the problems involved in designing a strategic game.

While dealing extensively with the techniques involved in writing games software and how to incorporate animation and sound, we follow by turning to the problems involved in designing a strategic game. Computer versions of such well-known classics as *Chess* and *Reversi* require the use of analysis tools which try to make some sense of the game player's input and make a sensible response.

One of the classic studies in this type of strategic game is *Mastermind* – not the TV variety but the game popular in the late 1970s as a board game. As played by people it involves a set of six coloured markers being placed in a random order by an opponent and you trying to guess where each of the colours is located, using the fewest number of guesses.

To make the program as portable as possible, we have written ours using numbers rather than colours to play the game. That means that the computer will pick six numbers from a set of six or more numbers pre-determined by you. If, for example, you set the limit to nine, the computer will pick six numbers from the range one to nine from which to obtain the six numbers you will have to guess. Having picked the number, the computer will place the set in order and process your guesses.

To allow you to expand the program, written for the BBC micro, to include title screens and other features we have started the program numbering at 50. Here is a brief indication of how it works:

50
Sets the screen mode and declares the initial values of the variables T and U.

60 and 70
Generates the screen message telling players how to play the game and finding how difficult they want to make it. The higher the field of numbers from which they can guess the more difficult the game.

80
Generates random variables for each of the six numbers in the set.

90
Is a check against the computer guessing the same number twice. To make the game more difficult, this line could be removed.

100
The players can enter their guesses; each time they do the variable T, which counts the number of guesses which have been made, is increased by one.

120-170
Calculate the value of variable Q, which determines whether or not the number guessed is in the combination.

180-230
Check whether or not the player has guessed a number which is both correct in placement and type.

240-290
Check the variables Q, P and U to decide appropriate responses to players' input; the U variable checks to see whether a player has cheated by looking at a quick flash of numbers on-screen as a hint.

This is obviously a simple version of the classic game and will take a little more work to convert for other machines. If you want to enhance it to use on-screen colours, a routine with variables A to FF to those of the colours required would do the trick.

On-screen blocks formed from sprites could then be designed and text run along the bottom of the screen. The fundamental design of the game would, however, remain unchanged.

Mastermind

```
 50 MODE 3:T=0:U=0
 60 PRINT "How many numbers would you
like to be in the field of guesses: if y
ou answer 9, the BBC will generate six n
umbers between 1 and 9. You MUST answer
with a"
 70 PRINT " number 6 or higher because
 the computer is expecting to be able to
 generate at least six different numbers
. BE SURE TO HIT RETURN AFTER EACH GUESS
":INPUT N
 80 A=RND(N):B=RND(N):C=RND(N):D=RND(N
):E=RND(N):F=RND(N)
 90 IF A=B OR A=C OR A=D OR A=E OR A=F
 OR B=C OR B=D OR B=E OR B=F OR C=D OR C
=E OR C=F OR D=E OR D=F OR E=F THEN GOTO
 80
 100 PRINT "Put in your guess with comm
as separating each number: i.e. 6,7,8,9,
3,4. What is your guess":T=T+1:INPUT G,H
,I,J,K,L
 120 Q=0:IF A=G OR A=H OR A=I OR A=J OR
 A=K OR A=L THEN Q=Q+1
 130 IF B=G OR B=H OR B=I OR B=J OR B=K
OR B=L THEN Q=Q+1
 140 IF C=G OR C=H OR C=I OR C=J OR C=K
OR C=L THEN Q=Q+1
 150 IF D=G OR D=H OR D=I OR D=J OR D=K
OR D=L THEN Q=Q+1
 160 IF E=G OR E=H OR E=I OR E=J OR E=K
OR E=L THEN Q=Q+1
 170 IF F=G OR F=H OR F=I OR F=J OR F=K
OR F=L THEN Q=Q+1
 180 P=0:IF A=G THEN P=P+1
 190 IF B=H THEN P=P+1
 200 IF C=I THEN P=P+1
 210 IF D=J THEN P=P+1
 220 IF E=K THEN P=P+1
 230 IF F=L THEN P=P+1
 240 IF A=G AND B=H AND C=I AND D=J AND
E=K AND F=L AND U=0 THEN CLS
 250 IF A=G AND B=H AND C=I AND D=J AND
E=K AND F=L AND U>0 THEN CLS:PRINT "YOU
CHEATED ";U;" TIMES, BUT..."
 260 IF A=G AND B=H AND C=I AND D=J AND
 E=K AND F=L THEN PRINT "YOU'RE RIGHT AN
D YOU MADE IT IN ";T;" GUESSES. YOUR COR
RECT GUESS WAS..":PRINT A,B,C,D,E,F:END
ELSE PRINT "TRY AGAIN. HINT: IF YOU WANT
 TO CHEAT PRESS 'Y' IN THE NEXT 3 secs"
 270 IF INKEY$(450)="Y" THEN U=U+1:PRIN
T "THE NUMBERS ARE....";A,B,C,D,E,F ELSE
 GOTO 280
 280 PRINT "There are ";Q-P;" of your n
umbers in the combination, but in the wr
ong place"
 290 PRINT"and an additional ";P;" that
 are in the combination and in the right
 place":GOTO 100
```

Multi-tasking

If you look at the commercial games available you will notice that the action normally involves more than one object moving about the screen at the same time. Not only that, a tune may be playing in the background as well. Thinking about how that is accomplished in programming terms can lead to confusion. How do you keep track of all those events and how do you manage to do several things simultaneously?

The concept of doing more than one task at the same time is not new to computing. Many mainframe computers permit more than one person to use it at the same time. In the business micro sector, multi-tasking micros commonly allow up to five people to use the micro, each running their own applications as if they were using their own personal computers.

There are several ways in which multi-tasking is accomplished but at the CPU level it is all a matter of interrupts. Further, even though it may not be advertised as a feature, home micros are capable of multi-tasking at machine code level.

To understand what an interrupt is, imagine someone sitting at a desk typing. The telephone rings and the person stops typing, answers the call and, after finishing the call returns to the typing, continuing from where he was interrupted. An interrupt on a micro is very similar. When an interrupt occurs, the CPU stops executing the main program, attends to the interrupt and, after it has been serviced, returns back control to the main program from the point where it was interrupted.

Both the Z-80 and 6502 microprocessors produce interrupts many times each second. The operating system/kernel of the micro makes good use of those interrupts because they occur at regular intervals and thus can be used for timing purposes and so on.

Even when the micro is apparently idle, thousands of machine code instructions are being executed. The operating system of the micro is performing housekeeping operations. They include updating the screen, checking to see if any keys have been pressed, and so on. Those tasks are also done on a regular basis – typically 60 times a second – and it is possible to patch into those tasks with your own machine code routine which, in turn, will also be executed the same number of times per second.

At this stage it is worth noting the difference between foreground and background tasks. Executing a program in Basic or machine code is the foreground task. The housekeeping and any interrupt-driven routines are referred to as the background tasks.

Setting-up an interrupt routine for your micro requires you to follow some set rules which are laid down by the manufacturer of the micro. Here are details on how to set up interrupts for the Commodore 64, Amstrad and BBC micros.

Commodore 64

One of the input/output chips on the C-64 produces an interrupt every 1/60th of a second. A kernel ROM routine located at $EA31 is executed and that deals with various housekeeping tasks – see listing one.

Whenever the interrupt occurs the foregoing is executed. The processor does not pass control straight to the routine at $EA31; instead the processor looks at the address which is held at $0314/$0315 (IRQ vector) and jumps to that location. On power-up of the C-64, the address at $0314 is $EA31 and thus control is passed to the kernel routine there but as that location is in RAM it can be altered and instead the address of our routine can be inserted. Control would then pass to our routine and at the end of the routine it would be necessary to jump to $EA31 to close the loop. So, to write a simple interrupt routine three steps have to be followed – set up any necessary parameters for the routine; set the IRQ vector to point to the routine; the routine.

Assuming that the routine is to reside at $C000, a typical example may look like listing two.

The code between $C000 – $C00C sets up a sprite. The second part of the program is very important. First, interrupts are disabled. That is necessary as the address of the interrupt routine which is to be loaded into $0314 must be loaded in two steps; an interrupt just after part of the address has been loaded could prove fatal. Once $0314 has been loaded with the address of the routine and the interrupts re-enabled, the routine is being executed from that point onwards.

In the example the interrupt routine resides at $C01C and increments location $D001 which moves the sprite. Notice the crucial JMP to $EA31 which maintains the loop.

The C-64 also generates other types of interrupt, namely non-maskable interrupts and a sprite collision interrupt of which the programmer can make use. For more details consult the reference guide.

Amstrad

Amstrad users will no doubt be familiar with interrupts, as they are a major feature of Locomotive Basic. The commands AFTER and EVERY allow different Basic subroutines to be executed after a given period.

Simple interrupt handling on the Amstrad is easy. On power-

Commodore 64

```
$EA31 Update clock
$EA34 Process cursor, tape motor, scan keyboard
$EA7E Restore registers
$EA86 Exit routine
```

```
C000 LDA #$01   ; TURN ON
C002 STA $D015  ; SPRITE.
C005 LDA $#96   ; SET SPRITE 0
C007 STA $D000  ; X POS TO 150 DECIMAL.
C00A LDA #$01   ; SET SPRITE 0
C00C STA $D027  ; COLOUR TO WHITE.
                ;
C00F SEI        ; DISABLE INTERRUPTS.
C010 LDA #$1C   ; LOAD $0314 WITH LOW
C012 STA $0314  ; BYTE ADRESS OF ROUTINE.
C015 LDA #$C0   ; LOAD $0315 WITH HIGH
C017 STA $0315  ; BYTE ADDRESS OF ROUTINE.
C01A CLI        ; TURN ON INTERRUPTS.
C01B RTS        ; RETURN CONTROL TO FOREGROUND TASK.
                ;
C01C INC $D001  ; INCREASE Y POS OF SPRITE 0.
C01F JMP $EA31  ; CLOSE THE LOOP.
```

AMSTRAD

```
9E00  LD HL,#9E0E   ; LOAD #39 WITH START
9E03  LD (#39),HL   ; ADDRESS OF ROUTINE.
9E06  RET           ; RETURN TO FOREGROUND PROGRAM.
                    ;
9E07  LD HL,#B939   ; LOAD #39 WITH ADDRESS
9E0A  LD (#39),HL   ; OF IS ROUTINE.
9E0D  RET           ; RETURN TO FOREGROUND PROGRAM.
                    ;
9E0E  PUSH AF       ; SAVE REGISTER ON STACK.
9E0F  LD A,7        ; ACSII CODE FOR BELL
9E11  CALL #BB5A    ; AND MAKE THE SOUND.
9E14  POP AF        ; RESTORE REGISTER.
9E15  JP #B939      ; CONTINUE WITH LOOP.
```

up interrupt mode one (IM1) is selected. In that mode an interrupt will make a CALL to address #0038 – #38 is a vector which holds the address of the interrupt service routine which is at #B939. That vector can be amended to point to our own subroutine.

Enabling an interrupt is simple. All that is required is to load the register pair HL with the address of the interrupt routine and load the contents of HL into location #39. The end of the routine should route back to the interrupt service routine with a JP – see listing three.

In the foregoing example the code from #9E00 – #9E06 sets up the interrupt routine and the code at #9E0E will be executed every time an interrupt occurs. Note the code from #9E07 – #9E0D, which disables the interrupt by loading the interrupt service routine vector with its original value.

To enable the interrupt routine a call is made to #9E00 but nothing appears to happen. That is because the interrupt service routine becomes active only when an interrupt occurs. Try entering a line of Basic and you will hear the bell tones.

There are other ways of using interrupts on the Amstrad beside the vector at $0039. A set of pre-packaged interrupts called events are available to the user. Unlike the more crude interrupt-handling method described, they are activated only when a certain condition arises, such as the frame flyback or a key being pressed. They are more flexible to use and readers should refer to the Amstrad firmware manual for more details.

BBC

The BBC micro makes extensive use of interrupts. To facilitate writing interrupt-driven routines, the programmer can make use of events, which are a form of high-level interrupt. An event is a pre-packaged form of interrupt provided for the user's benefit – the operating system does not make use of events. An event is specific for an application. The available events on the BBC micro are output buffer empty; input buffer full; character-entering input buffer; ADC conversion complete; start of vertical sync; interval timer crossing zero; ESCAPE condition detected; RS423 error detected; Econet-generated event; user event.

Each of those conditions generates an interrupt when needed. For example, the start of vertical sync generates an interrupt 50 times a second while, on the other hand, ESCAPE condition detected will generate an interrupt only when the escape key is pressed.

It is essential to realise that even if a particular event is disabled by the programmer it continues to generate interrupts but they will not be serviced by the event-handling routine.

To understand the use of events better consider this problem. We wish to sound a beep every time the escape key is pressed. Ordinarily, using a low-level interrupt the routine would be called very 1/50th of a second regardless of whether the escape key was pressed. That would mean that the interrupt routine would first have to test to see if the escape key was pressed and, if not, return to the foreground task.

Looking at the foregoing table, we can see that there is an event just for this occasion. To use it, it must first be turned on (enabled) and the address of the interrupt routine must be loaded into the event vector (EVNTV, &220).

David Janda looks at managing interrupts while thousands of machine code instructions are being executed.

Although the ESCAPE event is enabled and the address of the interrupt routine is then patched into the event vector that does not mean that the interrupt routine is being executed. It will happen only when the ESCAPE key is pressed – see listing four.

This article has dealt only with the subject of interrupts for the more popular machines. It is for individual programmers to decide to what use they want to put the interrupts.

It is crucial that an interrupt routine does a quick execute, typically no longer than one millisecond. That may not seem to be much but at least 300 machine code instructions can be executed in that time.

It is also very important to preserve all registers when entering an interrupt routine. That is done by pushing the values held in all registers on to the stack and popping them at the end of the routine.

BBC

```
0 Output buffer empty                          5 Interval timer crossing zero
1 Input buffer full                            6 ESCAPE condition detected
2 Character entering input buffer              7 RS423 error detected
3 ADC conversion complete                      8 Econet generated event
4 Start of vertical sync                       9 User event
```

```
100   REM EVENT INTERRUPT
110   DIM MC% 100
120   FOR I=0 TO 3 STEP 3
130   P%=MC%
140   [
150   OPT I
151   .Setup     LDX #06                  \ EVENT NUMBER 6
153              LDA #14                  \ IS SELECTED BY
155              JSR &FFF4                \ CALLING OSBYTE.
160              LDA #Routine MOD 256     \ LOAD EVENT VECTOR WITH
170              STA &220                 \ LOW BYTE ADDRESS OF ROUTINE.
180              LDA #Routine DIV 256     \ LOAD EVENT VECTOR WITH
190              STA &221                 \ HIGH BYTE ADDRESS OF ROUTINE.
200              RTS                      \ RETURN TO FOREGROUND PROGRAM.
210   .Routine   PHA
220              TXA
230              PHA                      \ PRESERVE REGISTERS.
240              TYA
250              PHA
260              PHP
270              LDA #07                  \ ASCII CODE FOR BELL
280              JSR &FFEE                \ SOUND BELL.
290              PLP
300              PLA
310              TAY                      \ RESTORE REGISTERS.
320              PLA
330              TAX
340              PLA
350              RTS
360   ]
370   NEXT I
380   CALL Setup
```

Making use of the world's oldest form of medium

Geof Wheelwright looks at one of life's most reliable sources of information.

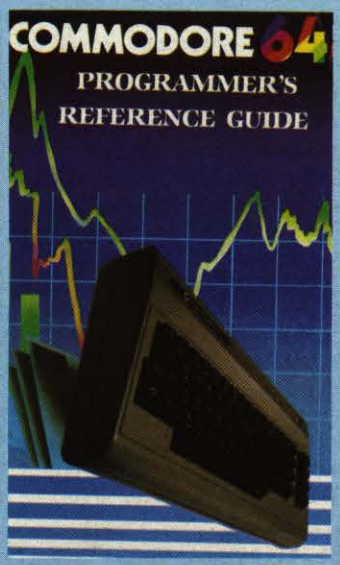
There must be some irony in the fact that the only way you can make the most of life's newest information medium, the computer screen, is by making use of one of the oldest – the printed book.

Without a good library of reference material, no programmer's workbench would be complete. The human brain has many more important things to think about than the upper memory locations of the BBC micro, or the number you have to POKE to have the colour red appear on a pixel in the middle of the Commodore 64 screen. A good set of programming guides will relieve that headache, while ensuring that the information is always at your fingertips.

One of the best examples of micro-specific programming guides is the Commodore *Programmers' Reference Guide for the 64*. It not only gives you all the necessary PEEKs, POKEs, memory locations, screen maps and other things required to unlock the full mystery of this best-selling machine but also provides a number of excellent example listings for functions such as terminal emulation, allowing you to access the RS232 port of the machine with a modem.

The guide is spiral-bound, like the excellent documentation with the BBC micro, and is thick, giving you about as much value as you are likely to obtain from a micro-specific book. It is available from Commodore or most Commodore stockists.

While most manufacturers provide advanced programming guides of this type – the Acorn *Advanced User Guide for the BBC micro* is also an excellent example of the genre – none is perhaps so essential as the one for the 64. The machine's Basic programming language means that you really need to resort to detailed PEEKs, POKEs and,



inevitably, machine code to have the 64 to do anything really impressive and useful.

Machine code programmers in general, however, would do well to buy a processor-specific rather than machine-specific guide if they are to write the most effective software and to ensure that it is portable across all machines using that processor. One of the best guides for it is Rodney Zaks' now-classic guide to programming the Zilog Z-80 chip – used in all CP/M machines, the Sinclair ZX-81, Spectrum and many others.

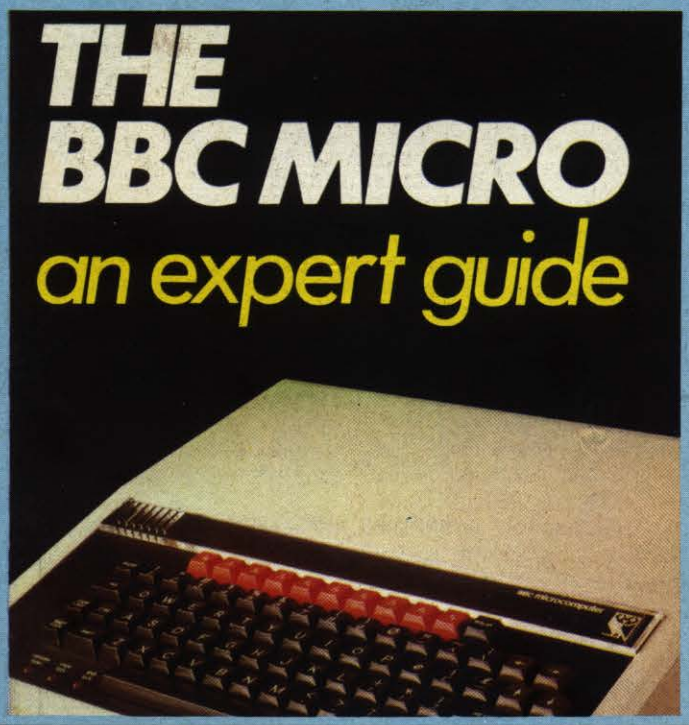
The *Z-80 Programmers' Guide* is published by Sybex and should be required reading for all those starting on the road to machine code hacking. Those with perhaps greater ambitions and more Z-80 experience should consider the rather long-winded *Z-80 Microprocessor Advanced Interfacing with Applications in Data Communications* by J. C. Nichols, E. A. Nichols and K. R. Musson, published by Howard W. Sams. It is a 396-page tome outlining in very heavy technical detail the vast number of applications and interfacing jobs which can be applied to the Z-80.

For those who are a little more wary of machine code than real-life languages, there is a wealth of further reading to supplement what you will have seen in that course. One of the better introductions in this area is *Computer Languages and their Uses* by Gary Marshall.

He uses comparisons with Basic to provide novice users with a point of reference for discussing other languages. The 108-page Granada book is two years old but its profiles of Basic, Prolog, Comal, Lisp and many other popular languages are as valid now as they were in 1984.

Probably the best place to seek information on more reading is a book devoted to that topic. *What to Read in Microcomputing* by C. Saiady and A. V. Stokes, published by Gower Publishing Co, is again an older book but deals with more than 400 solid, technical guides available up to that time and makes a worthwhile reference work.

It separates books into four main categories – background, languages, specific micros and hardware/software – listing the books by publisher, author and title. It is a somewhat slim volume but is worth reading if you can find it among the vast number of remaindered computer books which seem to be jamming the back rooms of many of the nation's major booksellers.



ATARI ST

Power Without The Price!

FREE SOFTWARE

When you buy one of the new Atari ST computers from Silica Shop, you will receive a large and varied software package free of charge. This package covers several applications and comprises a total of nine titles. All ST's now have TOS/GEM on ROM, and the total list of free software is as follows:

1) GEM - *DR Desktop environment with WIMP (in ROM)*
2) TOS - *Tramiel Operating System (in ROM)*
3) 1st WORD - *Word Processor by GST using the GEM environment and multiple windows*
4) BASIC - *Personal Basic by DR (with manual)*
5) LOGO - *Logo language by DR (with manual)*
6) DOODLE - *Simple paint/doodle drawing package (works on mono or colour systems)*
7) MEGAROIDS - *Asteroids type game by Megamax*
8) NEOCHROME - *A powerful colour paint and graphics package (only useable with colour systems)*
9) CP/M EMULATOR - *Allows the use of DR's Z80 C/PM software to run on any ST system*

3rd PARTY SUPPORT

The power and potential of the ST range of computers is causing a flood of new software titles, peripherals and accessories from third party manufacturers. Titles range from word processing to spreadsheet programs, from graphics and games to database management - all with those easy drop-down menus and windows. With the list of companies producing ST software including dozens of top names, you can expect some first class titles for the new ST range. The following includes a selection of the third party manufacturers who have developed, or are working on, products for the ST range:

ABACUS	EXTENDED S/W	MICRO-ED INC	ROBINSON SYS
ACADEMY	FIDELITY	MICROPRO	SCARBOROUGH
ACCOLADE	FIRST BYTE	MICROPROSE	SIERRA ON LINE
ACTIONSOFT	FIRST PUBNG	MICROPRO ENG	SM SOFTWARE
ACTIVISION	FLIP 'N' FILE	MIGRAPH INC	SOFTEK
ADVENTURE INT	GLENTOP PBNG	MILES COMP	SOFTLABS
ANTIC	GST SYSTEMS	MIRACLE	SOFTLOGIK
AMERICAN COVERS	HABA	MIRAGE	SOFTWARE COMS
ARTWORX	HAYDEN	MIRRORSOFT	SECS
ASHTON TATE	HIPPO	MONARCH DEV	SOFTWARE PUNCH
ATI	HISOFT	MOSAIC	SOFTWORKS
AUDIO LIGHT	INFOCOM	MULTIFORM	SORCIM/RUS
AZTEC	INSIGHT	MULTIMATE	SPINNAKER
BATTERIES INC	INSOFT	OCEAN	SST SYSTEMS
BAYVIEW	ISLAND LOGIC	ODIN	STONEWARE
BECKEMEYER	KNOWLEDGWARE	OMNITREND	SUBLOGIC
BETTER WORKING	KUMA	OSS	SUNDATA SERVICES
BLUE CHIP	LASERSOFT	OTHER VALLEY	SUNSHINE BOOKS
BOS	LEHRNER	OXXI	SUPPLEMENTAL
CASHLINK	LEVEL 9	PAPERLOGIC	SYSTEMATICS
CHANG LABS	LIONHEART	PARADOX	TALENT
CHELTEK SYST	LLAMASOFT	PENGUIN	TDI
CHIPSOFT	LONGMINSTER	PHILON	TELARIUM
COMPUTE!	MAINTHINK CORP	PLANNER	TK COMPUTER PRO
CROSSBOW MUSIC	MAP COMPUTERS	PLANTIR	TOP EXPRESS
DATABENCH	MARK of UNICORN	PROGRESSIVE	TOWNGATE
DATACODE SYS	MARK WILLIAMS	PROSPERO	TYNESOFT
DATA SYSTEMS	MARTIN CONSU	PRYORITY	UNISON
DELTRON	McGRAW HILL	PSION	VIP
DILITHIUM PRESS	MEGAMAX	PSYGNOSIS	WASON MICROCHIP
DRAGON GROUP	MEMOREX	QUICKVIEW SYS	WHITENDALE
DUFOSE PUBNG	METACOMCO	RAINBIRD	WINDHAM CLASSICS
ELECTRONIC ARTS	MICHTRON	REGENT	WORD of GOD COM
EXECON	MICRODEAL	RISING STAR	XLENT

520ST-M

NEW 512K 520ST-M KEYBOARD: The new 520ST-M keyboard costs only £346.96 (+VAT=£399) and is yet another price breakthrough for Atari Corporation. The keyboard now includes both an RF modulator and cable, allowing you to connect it to an ordinary domestic television set. In addition, the keyboard is supplied with 512K RAM, a mouse and a free set of 3½" disks containing applications software. The TOS operating system and the GEM graphics package are now supplied on 192K ROM chips which are already installed in the keyboard. This means that the operating system will automatically boot in when you switch the power on. In addition to the keyboard, you will also need to purchase either a ½Mbyte disk drive (RRP £130+VAT) or a 1Mbyte disk drive (RRP £174+VAT). Either disk drive will provide you with fast information retrieval and a vast amount of storage space. If you prefer not to use your own TV set, you may connect your ST to a monitor. You may purchase the Atari SM124 monochrome monitor (RRP £130+VAT), or one of Atari's two Thomson colour monitors. Alternatively, you may choose one of the many third party colour monitors which are available.

NEW 1024K 520ST-M+ KEYBOARD: In addition to the standard 520ST-M, we have a new keyboard which we are calling the Atari 520ST-M+. The M+ is a 520ST-M keyboard which has been enhanced by a third party RAM upgrade to 1 megabyte of memory. The 520ST-M+ is available from Silica at a retail price of only £433.91 (+VAT=£499). This product will provide you with an alternative to the 1040ST-F, but at a lower price. Additionally, it features the advantage of the 520ST-M's built in modulator.

£347

1040ST-F

For the businessman and the more serious home user, Atari have introduced the 1040ST-F, a low cost powerhouse which can be introduced to a business environment as a stand-alone system, or can support a mainframe computer as a terminal. The new one megabyte 1040ST-F enhances Atari's 'value for money' reputation in the marketplace as it is the first personal computer available with one megabyte of memory for less than £800. You can purchase the 1040ST-F as a monochrome or colour system. The price of the monochrome system is £799 (+VAT = £918.85), with the colour system at only £999 (+VAT = £1148.85). The new 1040ST-F not only features twice as much memory as the 520ST-M, but also includes a one megabyte double sided disk drive and mains transformer, both built into the console to give a compact and stylish unit with only one mains lead. The 1040ST-F is also supplied with a free software package. Unlike the 520ST-M, the 1040ST-F was manufactured solely with business use in mind and as such is supplied with a monitor. It does not include the RF modulator or lead. We now have stock of the 1040ST-F at all four branches of Silica Shop. Call into your nearest branch for a demonstration.

1-4 The Mews, Hatherley Road, Sidcup, Kent, DA14 4DX
117 Orpington High Street, Orpington, Kent, BR6 0LG
Lion House (1st floor), 227 Tottenham Court Rd, London, W1
Selfridges (1st floor), Oxford Street, London, W1A 1AB

£799

THE ATARI EXPLOSION!

If you read the specialist computer press, you will have noticed that there is one company which is getting a large slice of editorial space at the moment, that company is Atari Corporation. Atari have been making the news since the launch of their new 16/32 bit range of ST computers. Led by the powerful figure of Jack Tramiel and under the banner 'Power Without The Price', Atari are manufacturing new computers at unheard of prices, with the power to challenge firmly established market leaders. With the introduction of IBM compatibility, a CP/M emulator, a powerful networking system and a communications package for their new low cost powerhouses, it doesn't look as if it will be long before there is an explosion of the magnitude which will see Atari placed firmly besides such names as IBM and Olivetti in the personal computer marketplace. Read on for more details of what Atari are doing, and how they are putting their 'Power Without The Price' computers beyond the reach of the competition.

FREE CP/M EMULATOR

This newly annouced CP/M Emulation Package, will enable software written under Digital Research's Z80 CP/M operating system to be run on the ST family of computers. There are several thousand applications written for CP/M in the UK alone, and several of the major CP/M software development houses may convert their programs to 3½" disk format for the ST range. The CP/M emulation package is supplied FREE OF CHARGE by Silica Shop with all ST computers.

IBM COMPATIBILITY

To make the ST available to those businesses who currently run IBM systems and are looking for a low cost expansion method, Atari have announced a co-processing unit for ST computers. This processor will open the ST range to all IBM or IBM compatible software applications. The unit, which attaches to the ST computers via the DMA (Direct Memory Access) port, contains an Intel 8088 processor with 512K of RAM and will accept a 5¼" disk drive. In it's ST mode, the unit will also act as a second disk drive, offering the user an additional 500K of memory. The IBM co-processing unit should be available in late Summer 1986. If you would like to be informed when it is released, please complete and return the coupon below. We will send you further details as soon as we have them.

20Mbyte HARD DISK — £739

The new Atari hard disk for the ST range has just been released. All ST computers already have a hard disk interface built into them so there is no external interface required. The memory size of the disk is a massive 20 megabytes (unformatted) with a data transfer rate of 1.33 Mbytes per second. At a price of £739 (+VAT=£849), the 5¼" hard disk offers massive storage with fast access at a very reasonable price.

NEW ST SOFTWARE PACKAGES

There are now hundreds of software packages which have been announced for the Atari ST range. Titles available now include DB Man, a DBase 3 clone as well as H & D Base, a DBase 2 clone. In addition, PC Intercomm is a VT100 emulator which enables you to use any ST keyboard as a terminal connected to a mainframe or mini. Other programs include a Lotus 1-2-3 clone (see paragraph below).

VIP PROFESSIONAL - LOTUS 1-2-3™ CLONE

This is probably the most impressive program to have been released so far for the ST range. VIP Professional is an extremely easy to use, integrated spreadsheet, database and graphics program which is identical both in features and commands to Lotus 1-2-3™. The same spreadsheet analysis, information management and extraordinary business graphics are all combined in one easy to learn, affordable package. What's more, VIP Professional not only has all the features of 1-2-3™, you can also type the same commands to do the same things. Probably the most surprising feature of VIP Professional is not its total compatibility with Lotus 1-2-3™, nor its ease of use, but its price. Lotus 1-2-3™ for the IBM PC/AT costs £395 (+VAT=£454.25), whereas VIP Professional for the ST is a mere £169 (+VAT=£194.35). That's less than half the price! If you would like further details, of VIP Professional, please return the coupon below.

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